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# 1994 Calendar

## January
- **1** New Year's Day
- **3** Swinburne re-opens
- **26** Australia Day

## February
- **2** H.Ed. and TAFE enrolment period begins for Round 1 offers through VTAC
- **14** H.Ed. teaching begins: Engineering (alternate entry and final year) and Arts (Honours)
- **16** H.Ed. and TAFE enrolment period begins for Round 2 offers through VTAC
- **21** H.Ed. teaching begins: Engineering (Years I-IV)
- **28** H.Ed. teaching begins: Applied Science, Arts (other than honours), Business and Design

## March
- **14** Labour Day
- **30** H.Ed. classes end for Easter break
- **31** H.Ed. last day for withdrawal from a first semester subject, unit or course without penalty of failure* H.Ed. Census date for HECS (semester 1) H.Ed. and TAFE last day for applications for refund of General Service Fee

## April
- **7** H.Ed. classes resume after the Easter break
- **25** Anzac Day

## May
- **4** H.Ed. Graduation ceremony
- **25** H.Ed. Graduation ceremony
- **31** H.Ed. last day for application for awards for students completing courses in semester 1, 1994

## June
- **9** TAFE award presentation ceremony
- **13** Queen's Birthday
- **14** TAFE semester 1 examination period begins
- **24** H.Ed. and TAFE examination period ends
- **30** TAFE last day for applications for awards for students completing courses in semester 1, 1994

## July
- **1** H.Ed. inter-semester break begins
- **4** H.Ed. Engineering (alternate entry) semester 2 classes begin H.Ed. classes resume for semester 2

## August
- **31** TAFE last day for subject variations to enrolments for semester 2 H.Ed. last day for withdrawal of a second semester subject, unit or course without penalty of failure* H.Ed. Census date for HECS (semester 2) H.Ed.: Swinburne Higher Education Division TAFE: Swinburne TAFE Division* Students should be aware that some faculties have an earlier deadline for addition of new subjects. Students should consult their faculty office.

## September
- **16** H.Ed. classes end for mid-semester break
- **26** H.Ed. Design classes resume after mid-semester break

## October
- **3** H.Ed. (except Design) classes resume after mid-semester break
- **12** H.Ed. Graduation ceremony
- **21** H.Ed. last day for application for awards for students completing courses in December 1994

## November
- **1** Melbourne Cup Day
- **4** H.Ed. Business semester 2 examination period begins
- **7** H.Ed. Applied Science, Arts and Engineering Semester 2 examination period begins
- **18** H.Ed. semester 2 examination period ends
- **21** TAFE semester 2 examination period begins
- **30** TAFE last day for application for awards for students completing courses in December 1994

## December
- **2** TAFE semester 2 examination period ends
- **24** Swinburne closes for Christmas break

### TAFE students

As no information exists in this calendar concerning the starting dates and finishing dates of TAFE teaching periods please contact one of the following for this information:

**Business Studies — Hawthorn**
School Secretary, 36 Wakefield Street, 819 8957

**Business Studies — Prahran**
School Secretary, H423, 522 6832

**Engineering and Industrial Sciences — Hawthorn**
School Administrator, IC219, 819 8916

**Furniture Studies — Prahran**
School Secretary, 2/40 Green Street, 522 6752

**Social Sciences and Arts — Hawthorn**
School Administrator, 32 Wakefield Street, 819 85531819 8598

**Social Sciences and Arts — Prahran**
School Administrator, H640, 522 6800

Or for general campus information:

**Hawthorn —** Secretary, Deputy Director, TB109, 819 8486

**Prahran —** Secretary, Deputy Director, G110, 522 6702
Swinburne
University of Technology

Handbook
Higher Education Division
1994
The information given in this *Handbook* is intended as a guide for persons seeking admission to Swinburne University of Technology and shall not be deemed to constitute a contract on the terms thereof between Swinburne University of Technology and a student or any third party. The Higher Education Division and the TAFE Division of the University both reserve the right to cancel, suspend or modify in any way the matters contained in this document.

In 1982, the Freedom of Information Act was passed by the Parliament of Victoria. The Act, which applies to Swinburne and other tertiary institutions, came into effect on 5 July 1983. The Act gives (with certain exemptions), legally enforceable rights of access to information. It is the policy of Swinburne to conform with the spirit and intention of the Act in the disclosure to the public of any information they may seek. Enquiries should be made to the Registrar.

Equality of education opportunity is Swinburne policy.

There is a total ban on smoking in all Swinburne buildings and vehicles from January 1 1991.

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Coat of Arms

The coat of arms, conferred on Swinburne by the College of Arms on 25 June 1969, is based on the coat of arms of the Swinburne family.

At a period during the 12th-13th centuries, when the northern counties of England were ruled by the Scots, a knight of France came to the aid of Queen Margaret of Scotland. She rewarded him with a grant of land in what is now Northumberland, on the banks of the Swin Burn, a small river that flows into the North Tyne, where he built a castle. He became known as William Swinburn(e) and soon the county reverted to the crown of England.

The Swinburne family coat of arms in medieval times was silver with three boars' heads in triangular formation. In the 17th century, during the wars between the Stuart Kings and the Parliament of England, the Swinburnes fought for the royalists. After the restoration of Charles II in 1660, the head of the family was created a baronet for his services. The crest became a baronet's coronet, with the boar's head rising from it and the coat of arms, divided horizontally red and silver, was charged three cinquefoils counter-charged.

Swinburne holds a unique place among educational institutions in Australia in the link that persists between it and the founder and his family. The conferring of a modification of the family's coat of arms preserves and strengthens that link.

The arms: the basic colours of red and white, and the cinquefoils charged on the shield, commemorate the arms of the Swinburne family. The omission of the third cinquefoil which appears in the family coat and the addition of the Bordure and the Mullets (Stars) are what are known heraldically as 'differences,' which may often serve to indicate an association with another armigerous body or family. The four Mullets in Cross symbolise the Southern Cross.

The crest: the demi-Boar and the cinquefoil perpetuate the Swinburne connection; the book is symbolic of learning.

The motto: the College of Arms' translation of the motto is:

Achievement through learning.

How to use this Handbook

The Swinburne Handbooks are complete references for prospective and current students for the University's academic programs and structures.

All general information about Swinburne services, facilities and administration is listed in the first two chapters and a regulations and procedures chapter is located at the end of the Handbook.

The course information is ordered into chapters according to the faculty or school. Each one of these chapters lists information in the following order:

- staff associated with the area
- a full list of courses offered (indicating course codes — often in chart form)
- general information about the faculty or school
- specific information about each course including a course structure that lists all required units/subjects.

All units or subjects may be found at the end of each chapter in order of subject code (in alphabetical — numerical order).
A proud history

The 1992 proclamation by the Parliament of Victoria of Swinburne University of Technology Act, marked not only recognition of its distinguished history, but signalled as well the beginning of a new period of growth and innovation for Swinburne. From its establishment in 1908 in Melbourne’s eastern suburb of Hawthorn, Swinburne has grown from a local provider of technical education into a multidisciplined, multicampus provider of higher education of national and international significance.

Swinburne was established as the Eastern Suburbs Technical College, and its first students were enrolled in 1909, when classes began in carpentry, plumbing and blacksmithing. The institution grew and prospered. Soon afterwards, a boys junior technical school and the first girls technical school in Victoria, were established.

In 1913 the institution changed its name to Swinburne Technical College, to commemorate the Honourable George Swinburne, a former Mayor of Hawthorn and a member of the Parliament of Victoria who was responsible for the initial establishment of the college.

In 1965 Swinburne affiliated with the Victoria Institute of Colleges which was established in that year by an Act of the Parliament of Victoria to ‘foster the development and improvement of tertiary education in technical, agricultural, commercial and other fields of learning (including the liberal arts and the humanities) in institutions other than in the universities of Victoria’.

The range of courses and the various levels at which they were offered grew to such an extent that in 1969, the boys and girls technical schools were taken over by the Victorian Education Department while the college remained as an autonomous institution.

An extensive re-organisation of advanced education took place in Victoria in the period 1976-78 culminating in the passing of the Victorian Post-Secondary Education Act. Under the Act the Victoria Institute of Colleges was dissolved and the Victorian Post-Secondary Education Commission established. Under the new arrangements, Swinburne Council was given power to grant bachelor degrees. The first of these was awarded at a conferring ceremony held on Thursday 21 May 1981 at the Camberwell Civic Centre.

Swinburne University of Technology was proclaimed on 1 July 1992, representing the final step in a series of events which began when George Swinburne founded the Eastern Suburbs Technical College.

In accordance with the Swinburne University of Technology Act, ‘The Council must elect as prescribed a person to be the Chancellor of the University’. Noted Australian businessman, Mr. Richard Pratt AO was installed as Swinburne’s Foundation Chancellor on the 15 March 1993.

Swinburne today

Swinburne has a strong reputation in Australia and overseas as a provider of career orientated education and as an institution with a commitment to research. The University maintains a strong technology base and important links with industry, which are complemented by a number of innovative specialist research centres which attract a great deal of international interest.

A feature of many Swinburne undergraduate courses is the applied vocational emphasis and direct industry application through Industry Based Learning (IBL) programs. Swinburne was a pioneer of IBL programs which place students directly in industry for vocational employment as an integral part of the course structure.

Swinburne is now one of a few Australian universities whose responsibilities span the range of programs from apprenticeships to PhDs. In keeping with this breadth of involvement the University continues to play a leading role in creating new approaches to integration between sectors.

The creation of study pathways between sectors and courses is firmly in place at Swinburne. Current pathways involve moving either from the TAFE sector into Higher Education or from TAFE based VCE studies into full TAFE courses. A limited number of pathways are available for students to move from degree courses into TAFE studies, and this will increase in the future. This process of articulation provides students with greater flexibility to complete tertiary qualifications.

Teaching and learning enhancement is a strategic priority for the University, and Swinburne is committed to the transfer of lifelong learning skills.

An Associate Degree in Social Science is an exciting initiative in Higher Education. This new qualification offers choice and diversity to students and is exclusive to Swinburne University of Technology. The two-year Associate Degree is a recognised and relevant qualification designed to provide students with the necessary skills to work in a range of administration and service areas.

Swinburne was founded to provide expanded and more convenient educational opportunities to the residents in the ‘outer east’ of Melbourne. Due to expansion of the city during the intervening years between establishment and transition to university status, Swinburne’s operations are now conducted across three campuses Hawthorn, Mooroolbark and Prahran. At the same time as it focuses on its regional responsibilities, Swinburne is heavily involved in international initiatives, playing a significant part in the internationalisation of Australia’s tertiary education system.
Teaching Divisions
Swinburne has two teaching divisions under the control of one Council. They are:

Higher Education Division
This division offers professional qualifications (diplomas and degrees of Bachelor) and graduate qualifications (certificates, diplomas and degrees of Master and PhD). Enrolments in 1993 were 4958 full-time and 3873 part-time students.

Technical and Further Education Division (TAFE)
This division offers courses at professional and para-professional level, covering associate diploma, advanced certificate, apprenticeship, VCE and access programs. A number of specialist courses are also provided for industry and the community. Enrolments in 1992 were 4093 full-time and 7319 (not including short courses) part-time students.

Hawthorn Campus
General enquiries: 819 8911
Hawthorn is Swinburne’s original campus. It offers a broad range of undergraduate higher education and TAFE courses in Applied Science, Art and Design, Arts, Business and Engineering. All Swinburne’s postgraduate programs are offered on this campus.

Hawthorn campus is one of the few in Australia that offers well integrated Higher Education and TAFE sectors on the one campus. This is illustrated by the innovative Pathway Program that is implementing detailed articulation and credit transfer programs between TAFE and Higher Education.

It is also the site for many of Swinburne’s research and training centres.

Students enjoy a full range of services and facilities including a library, bookshop, sports centre, cafeterias, health centre, childcare, counselling and careers advice.

The Hawthorn campus is located seven kilometres from the city, and is easily accessible by train and tram. Limited areas have been set aside for student parking. The campus is also close to the Glenferrie Road shopping centre which offers a wide variety of goods and services.

Mooroolbark Campus
General enquiries: 728 7111
Students at the Mooroolbark campus enjoy an attractive intimate atmosphere in a native setting, boasting a small lake, sporting facilities and all the amenities of a modern tertiary institution. This new campus increases educational options in the outer eastern suburbs.

Situated on the site of the former MDA Grammar School in Edinburgh Rd, Lilydale, the campus provides courses in the Business, Applied Science, Arts and Engineering Faculties.

The courses offered in the Bachelor of Business are in Accounting, Marketing and Economics and the Bachelor of Applied Science course in Mathematics/Computer Science is also offered, with students undertaking the same programs as students at the Hawthorn Campus. The majors offered in the Bachelor of Arts are Psychology, Media Studies, Sociology, Philosophy and Cultural Studies, Economics (taught by Business Faculty), Literature, and Political Studies where students numbers permit. A distinctive aspect of the Mooroolbark Campus is in Business and Arts is that there is the opportunity to cross faculty boundaries which allows the construction of tailored programs which combine aspects of Business and Arts. Students wishing to study a language (Japanese, Italian, Korean, Vietnamese) currently must secure a place on the Hawthorn Campus.

Prahran Campus
General enquiries: 522 6700
Prahran campus (formerly Prahran College of TAFE) joined Swinburne in 1992. The roots of this campus are deeply entrenched in the history of the local area. This small and friendly campus with its mixture of modern and historical buildings, is easily accessible by train, tram and bus and is situated in the heart of cosmopolitan Prahran.

Through its Schools of Business Studies, Social Sciences and Arts and its Centre for Furniture Studies, the campus offers Associate Diploma, Advanced Certificate and Certificate courses via full-time or part-time enrolment. External study options are also available through the Off-campus Department.

Courses include: accounting, credit management, credit procedures and practices, computer programming, insurance, information technology, real estate, records management, office and secretarial studies, management, library and information studies, child care studies, residential and community services, Koori child care, theatre technology and small companies, graphic art, art and design — film and video production, applied language, ESL, literacy, furniture studies for indentured apprentices, year eleven and year twelve VCE.

Our 600 fee-for-service short courses are also offered embracing the entertainment industry, hobby, skill enhancement, language and business and computing.

Full-time Bachelor of Arts courses in Graphic and Industrial Design are also offered through the School of Design.
Swinburne Council

Membership as at 1 October 1993

Chancellor
R. Pratt, AO

Appointed by the Governor-in-Council

C.M. Burnup, BA(SIT), DipEd(LaT) (Deputy Chancellor)
R.J. Coughlin, DipAppSc(SIT), TSTC(MSTC)
W.G. Elms, FCA, AFAIM
P.N. Honeywood MLA, BA(Hons)(ANU)
R.S. Ives, MLC, BA(Hons), DipEd
N.J. Maughan MLA
B. van Ernst BA, BEd(Mon), Med(LaT), PhD(LaT), TPTC, MACE
K.N. Watson, AM, BA, BEd(Melb)

One vacancy

Appointed by the Minister for Education

D.I. Allen, BCom, BEd(Melb), MA(UCB), EdD(UCB)

Appointed by the University Council

K.D. Brown, CertProfMedLabTech(NZ), GradDipOrgBeh(slf), llIC(Haw)
T.W. Brown, FcA
T.P. Bruce, LLB(Melb)
A. Polis, BA, DipEd(Melb)

Four vacancies

Member ex officio

Professor J.G. Wallace, MA, Med(Glas), PhD(Brist), FASSA

(Vice-Chancellor)

Appointed by the Academic Board

Associate Professor T.H. Randle, BEd(Melb), MSc(LaT), PhD(Salford), ARACI, MIFSC, MACA, MAMMF

Appointed by the Board of Technical Studies

P. Veenker, BBus(Act)(RCAE), BBus(SIT), MedStud(Mgt)(Mon), TTPC, CPA, MACE

Elected by higher education academic staff

M. Suffern, BChem(Hons), DipChemEng, DipAppChem(SIT), MIEAust

Elected by TAFE academic staff

C. Forbes, BA, BSc(Hons), TPTC

Elected by general staff

M. Haase, BA, L. Scheuch-Evans, BA in Foreign Service (G'town)

Elected by higher education undergraduate students

N. Kotsopoulos

Elected by higher education postgraduate students

R. Kanagalingam, BBus(SIT)

Elected by TAFE students

SD. Rayward

Council Secretariat

Secretary

F.G. Bannon, BCom(Melb), FCPA, ACS, ACIM, LCA

Executive Officer

A.J. Miles, BSc(Melb), BEd(Mon)

Staff and Officers of the University

Chancellery

Chancellor
R. Pratt, AO

Vice-Chancellor

Professor J.G. Wallace, MA, Med(Glas), PhD(Brist), FASSA

Executive Assistant to Vice-Chancellor

S.J. Krul, BA(Hons)(Massey)

Deputy Vice-Chancellor

F.G. Bannon, BCom(Melb), FCPA, ACS, ACIM, LCA

Executive Assistant to Deputy Vice-Chancellor

P. Veenker

Director, TAFE Division

N. Zorbas, BSc(Hons)(WAust), Med, MEngSc(Melb), MEEE, FIEAust

Maintenance and Engineering Officer

S. Blackburn

Administration and Services Officer

D. Sharp

Catering Department

Manager

E.M. Briant, BCom(RMIT)

Council Secretariat

Executive Officer

A.J. Miles, BSc(Melb), BEd(Mon)

Equity Unit

Manager

M. Jones, CertEd(Wales), BEd(VicC), MedThesis (Mon)

Finance Department

Manager

J. Vander Pal, DipAccy(RMIT), BBus(SIT), AASA, CPA, RCA

Systems Accountant

J. Rayner, BSc(Melb), DipEd(Melb)

Divisional Accountant, TAFE Division

P. Wilkins, BBus(VicC), GradDipBusAdmin(SIT), AASA

Divisional Accountant, Higher Education Division

P. Hotchin, BSc(Deakin), GradDipBusAdmin(SIT), AASA, CPA

Human Resources Department

Manager

P.D. Mudd, BE(NSW), FAIA

Safety Co-ordinator

A. Skotnicki, BAppSc(SIT), GradDipIndHygine(Deakin)

Planning and Information Systems

Manager

R.D. Sharma, BSc(Tas), DipEd(Tas), GradDipOpsRes(RMIT), MedAdmin(New Eng), PhD

Promotion and Development

Manager

Associate Dean BC. McDonald (Acting), BCom, DipEd(Melb), FCPA
Publicity and Information Unit

Head
N. Manning

Swinburne Press
Manager
L. Scheuch-Evans, BS in Foreign Service (G'town)
Registrar's Department
Registrar
G.L. Williamson, BSc(Adel), GradDipAppSc(SIT)
Assistant Registrar (Applied Science)
J. Berry
Assistant Registrar (Arts)
T.M. Kilsby, BA(LaT)
Assistant Registrar (Business)
M. Conway, BA(Griffith)
Assistant Registrar (Engineering)
A.L. Deeds, BBus(STT), ARM
Assistant Registrar (Services)
L. Scheuch-Evans, BS in Foreign Service (G'town)
Assistant Registrar (Student Administration)
H.J. Uffindell, GradDipEdAdmin(Haw)
Security Department
Chief Security Officer
N. Burge
Student and Educational Services
Manager
Z. Burgess, BA(Mon), GradDipEdPsych(Mon), MEd(LaT), MARS, VACF, AIM

Office of Research and Graduate Studies

Academic Head
Professor D.E. Mainwaring, BSc(Hons), DIC, PhD(Lon), FIEAust
Research Coordinator
J. Baird, BA(Hons), BLitt(Melb), MBA(RMIT)

Information Systems Division

Pro Vice-Chancellor
To be appointed
Computer Services and Information Technology
Manager (Acting)
A. Young, BEng, MEng, MIREE
Learning Services
Director
K. Anderson, DipEE, TITC, BSc(Melb), MA(Adelaide)
Library Information Services
Swinburne Librarian
F. Hegarty, BA(UNewEng), DipLib(QIT), BEd(LaT), AAUA

Higher Education Division

Faculty of Applied Science

Dean of Faculty
Professor J.G. McLean, BSc(Syd), HDA(Hons), PhD(Melb)
Head, Department of Applied Chemistry
I.K. Jones, BSc, DipEd, PhD(Melb), FRACI
Head, Department of Computer Science
Associate Professor D.D. Grant, MSc(Melb), PhD(Reading)
Head, Department of Mathematics
J.R. Iacono, BA, MEd(Mon), TITC
Head, Department of Physics
Professor R.B. Silberstein, BSc(Hons)(Mon), PhD(Melb)

Faculty of Arts

Dean
Professor L.A. Kilmartin, BA(Qld), MA(ANU), PhD(Lat)
Associate Dean
F.X. Walsh, BA(Melb), BEd(Mon)
Chair, Asian Languages and Culture
A. Skoutarides, BA(Hons), PhD(Mon)
Chair, Italian Language and Culture
D. Fairweather, BA(WA), PhD(Edin), DipEd(SIT)
Chair, Media, Literature and Film
Associate Professor T. Barr, BEd(LaT), MA(Nth)
Chair, Philosophy and Cultural Inquiry
M. Harney, MA, DipEd(Melb), PhD(ANU), GradDipArt(AppF&Tv)(SIT)
Chair, Political Studies
D.Y. Mayer, MA, LLB(Melb), MA(Mon), GradDipEd(Haw)
Head, Department of Psychology
Associate Professor K.J. Heskin, BA(Hons)(Queens), MA(Dub)
PhD(Dunelm), CPsychol, AFPSS, MARS
Chair, Sociology
J. Mulvany, BA(Hons), DipEd, PhD(Mon)

Faculty of Business

Dean of Faculty
M.C. Frazer, BA(Deanin), BSc(Hons)(Mon), GradDipEdTert(DDIAE), MAdmin(Mon), PhD(Camb), AIIMM, MAIP, MACE
Head, Department of Accounting
W.C. Nash, BCom, DipEd(Melb), MBA(Cranb)
Head, Department of Economics
D.S. Thomas, BA(NSW), MA(Syd), PhD(Mon)
Head, Department of Information Systems
D.G. Adams, BCom(Melb), MAdmin(Mon), TSTC
Head, Department of Law
P. Holland, DipEd, BCom, LLB(Hons)(Melb), MEnSci(Mon), Barrister & Solicitor(Vic) Supreme Court
Head, Department of Marketing and Organisation Behaviour
Associate Professor S. Long, BA(Hons)(Melb), TSTC, MEd(Mon), PhD(Melb)

Faculty of Engineering

Dean of Faculty
Professor L.M. Gillin, BME, MEngSc, MEd(Melb), PhD(Cantab), ASMB(Ball’), FIEAust, FAIM, FACE, FWACE
School of Civil Engineering and Building
Associate Dean
R.B. Sandie, BCE, MEngSci(Melb), FIEAust, CPEng
School of Electrical Engineering
Associate Dean
B.A. Neyland, BEE(Melb), ME(Melb), TTC(TTC)
School of Innovation and Enterprise
Director
Professor L.M. Gillin, BMetE, MEngSc, MEd(Melb), PhD(Cantab), ASM(Ball’r), FEAust, FAIM, FACE, FWACE
School of Mechanical and Manufacturing Engineering
Associate Dean
W.G. Teague, DipMechEng(CIT), BComm, BE(Mech), MEngSc(Melb)
School of Design
Professors
Head of School
R. Miller-Smith, FCSD, FTAI, FTSE, FRSA
Research
T.W.A. Whitfield, BA(Hons), PhD
Head, Department of Design
D.G. Murray, BA(Graphic Design)(SIT), TTTC, MDIA
Head, Department of Industrial Design
G.A. Lewis, DipA&D,(DI)(Prarhan), MDIA
Academic Coordinator
R. Macfarlane, DipArt(SCOT), TTTC(Graphic Design)
Manager, Centre for Animation and Interactive Multi-media
J.E. Bird, DipArt(SIT), TTTC
Mooroolbark Campus
Manager
J. Wangeman, BCom, BEd, MA(Melb), MAPS
Coordinator, Administrative Services
J. Austin
TAFE Division
Director
P. Veener, DipBUs(Acc)(PCAe), BBUs(SIT), MEdStud(Mgt)(Mon), TTTC, MDIA
Deputy Director, Operations
G. Harrison, DipMechEng(CIT), BSc(Melb), TTTC
Deputy Director, Policy and Planning
Dr. C. Woodrow, CSBs(WillAng), BSc, MEd(UWA), PhD(Tor)
Assistant Director of Educational Services
D. Bennett, BA, DipEd, BEd, MACE
Manager, TAFE Administration and Development
L. Fett, BSc, MEnSc, GradDipComp
Senior Curriculum Development Officer
J. Sutherland, BBSc, DipEd, GradDipPAppPsy
Section Leader, PC Support Services
D. Williamson, O.N.
School of Business Studies
Hawthorn campus
Head
R.W. Conn, BBUs(SIT), DipEd(Mon), ASCPA
Head, Finance and Information Technology Department
M.J. Joyce, BBUs(SIT), DipEd(HIE), ASCPA
Head, Marketing and Administration Department (Acting)
C. Kent, NZTC(CSTC), BA(SIT)
Manager, Centre for Business Development and Training
J. Torbiner, BEd(Melb), GradDipBus(HRD)(Deakin), AIMM
Prahran campus
Head
G. Ryan, BSc, GradDipBus, DipEd, AACS
Head, Finance and Administrative Studies
D. Tonkin, DipBusStud, DipEd
Head, Real Estate and Law
D. Sedgwick, BA, LLB, TSTC
Head, Industry Training
G. Romuld, BSc, DipEd
Head, Traineeships and Labour Market Programs
S. Henderson, BA, DipEd, BEd
Head, Library and information Studies
M. Hoffman, BA, HDT, ARMIT, AALIA, BEd
School of Engineering and Industrial Science
Acting Head
R. Fallu, BSc, DipEd(Mon)
Head, Electrical and Electronics Technology Department
A.G. Hampton, TechCert(Electronics)(HI), BEd(Deakin)
Acting Head, Industrial Sciences Department
J. Cashon, BSc, DipEd, DipCompSc, GradAIP
Head, Mechanical and Manufacturing Technology Department
J. Brennan, CEng(IME, Ireland), DipEng(NavalArch)(RMIT), BEng(Melb)(RMIT), DipEd(Bar), MEngSc
Manager, Centre for Engineering Technology
L.J. McLaughlan, Cert(Jig&ToolDraft), CertFoolmaking). TRTC, DipT(Haw)
Manager, Industry Training Unit
C. De Martinis, BEd, MSc(Lt), GradDipOccHyg(Deakin)
Manager, National Scientific Instrumentation Training Centre
G. Jordan, MPHarm(VicCollPharmacy)
School of Social Sciences and Arts
Head (Acting)
J. Bisland, BA(Hons), MA, GradDipChDev, MEd, GradDipEd
Deputy Head (Acting)
G. Arnott, BEd, BEd(Mon), GradDipBusAdmin(Bst)
Hawthorn campus
Head, General and Community Studies Department
K. Wiltshire, BA, BEd
Head, Access Education Department (Acting)
R. Thomas, BA, MEdSt(Mon)
Director, English Language Centre
A. Redpath, BA, DipEd, GradDipTESL
Manager, Workplace Skills Unit
S. Naylor, TPTC, TSpTC
Prahran campus
Head, Adult Education
B. Brosnan, BA(Hons), MEd(Monash), DipTEFL(IIC) Edinburgh)
Head, Child Care Studies
J. Gilchrist, TPTC, DipKTC, BEd, GradDipEdAdmin(Melb)
Head, Family and Community Studies
M. Juchnowski, BA, DipEd, NACE
Head, Language and Community Programs
K. Hellyer, BA, DipEd, DipEng(Monash)
Head, Arts
P. Creed, BA(Hons), DipTeaching
Administration and services
Access Education Department

Acting Head
R. Thomas, BA, MEd(Mon), 819 8816
Secretary
C. Boykett. 819 8634

Compensatory Education
Individual assistance in English and mathematics is available to students of all courses at Swinburne. The need for tuition may be related to a student's problems with a mathematics and/or English subject. Alternatively, difficulties in English or mathematics may affect a student's progress in a range of subjects of their particular course of study. Particular attention is given to the provision of English tuition to students from non-English speaking backgrounds. Tuition may be short-term to overcome a specific difficulty or arranged on a weekly basis over a longer period of time.

Community Access Programs
Staff are also responsible for providing access to any members of the community who wish to improve their English and/or mathematics skills. Consequently, a variety of courses in mathematics and English are available at a range of different skill levels from one to one tuition to small group classes. In addition, courses are provided with appropriate mathematics and English content to cater for students interested in sitting an entrance examination in nursing, the police force, ambulance service or the fire brigade.

The department operates from the houses located at 42 and 44 William Street. Understanding staff are available to discuss people's problems in English and/or mathematics and follow-up with appropriate tuition.

Alumni
The Swinburne Alumni Association is an association of former students, former and current staff and other friends of the University. Its mission is to establish and maintain links with the university's alumni for the purpose of advancing the status of Swinburne both on and off campus.

The primary aims of the Swinburne Alumni Association are:
- to establish and maintain (foster) effective dialogue with the alumni of the University;
- to provide services and activities responsive to the needs of alumni members;
- to provide forums for alumni to establish and maintain contact with their peers;
- to encourage alumni to become involved in policy making and education issues within the University;
- to raise funds to assist the University with the provision of education to present and future students.

As a basic minimum, the objective each year is to provide alumni with three copies of the University's external publication, Swinburne News - free of charge. Alumni are Swinburne's best ambassadors and the aim is to keep them informed with all the University's latest news and developments.

Another way that people can maintain their contact with the University following completion of their course is to become a Contributing Alumni Member. Payment of a fee (60% p.a. 1993) entitles members to use the library, sports association, tool library, bookshop and obtain significant discounts (20%-30%) on hiring charges for seminar rooms/computing laboratories of the Information Technology Institute.

Upon satisfactory completion of an award course (Higher Education and TAFE), names and addresses of alumni are transferred onto the Alumni Association database.

For future information about the Swinburne Alumni Association, contact:
Associate Dean Bruce McDonald
Manager, Institutional Promotion & Development
Telephone: 819 8626

Bookshops (Student Bookshop Co-operative Limited)

Manager
R. Wilkens, 819 8225
General enquiries
819 4266

Location
Hawthorn
The bookshop is located on the ground floor next to the Cafe in the Union Building, John St., Hawthorn.

Prahran
The bookshop is located on the first floor of the Union Building (U Building), 160 High St., Prahran.

Mooroolbark
The bookshop is located in the Union Building (F Building) next to the cafeteria.

Normal trading hours
Hawthorn campus
Monday-Thursday 8.30am-7.30pm
Friday 8.30am-5.00pm

Prahran campus
Monday-Thursday 9.30am-5.30pm
Friday 9.30am-5.00pm

Mooroolbark campus
Monday-Friday 9.00am-4.00pm

During semester breaks and other times please check the Bookshop notice board.

History
The co-operative began trading in February 1978, its objective being to provide an efficient and convenient service to the Swinburne community.

The Bookshop was set up as a co-operative structure to raise working capital via the sale of shares and also to ensure that the control of the operation remained with the members who use the co-operative. The co-operative's profits remain with the organisation to ensure its continued growth and viability. No external beneficiaries exist.

Membership
For the co-operative to continue to operate successfully it must have members. By members buying shares and patronising the bookshop they are in turn ensuring the Bookshop has an inflow of share capital for growth and the patronage ensures its viability.

In return the co-operative provides a convenient and efficient service on campus. Members are also entitled to attend and vote at all Annual General Meetings and are also eligible to be elected as a board member of the co-operative as per the society's rules.

To become a member of the co-operative you simply fill in a share application form and pay $5.00 for 5 x $1.00 shares. You will then be issued with a membership card which
Chaplains are able to arrange weddings, funerals, christenings and other rites and ceremonies as requested; especially for those who find the traditional church setting difficult. Phone the campus number for details.

As pastors, they are able to support those in any need, or who wish to work through the basic issues of life, or who wish to clarify whatever is happening to them. They are willing to celebrate life's achievements, and to hear what God may be saying to any student or staff member.

New students are particularly invited to make themselves known to the chaplains. They are in touch with all churches in their areas and are happy to supply information about the churches to you upon request. They also have information relating to other religious groups available.

For specific religious affiliations visiting chaplains are available — Jews, Catholics, Orthodox, Lutheran etc. International students may wish to contact chaplains of their own language group — Korean, Japanese, Chinese, Indonesian, Vietnamese etc. Please enquire 819 8489.

Child-care Centre

Coordinator
S. Somerville, 819 8519

A cooperative was formed in 1975 to provide child-care facilities at Swinburne for parents in need of this service.

The primary objective of the Centre is to meet the needs of the children by providing a secure and happy atmosphere combined with experiences which will foster their development. The aims of the Centre revolve around encouraging a beneficial contact that will produce an understanding of the needs of the individual child and their family.

The Centre's two houses can cater for up to thirty-five children at one time with six caring staff. The children are not separated into age groups but form one large, if rather noisy, family. A combination of structured and free choice experiences have created a warm, relaxed program. The children are encouraged to go at their own pace, to develop their own style, to find their own solutions and enjoy their own creativity.

The Centre caters for children up to five years of age, not only from Swinburne parents, but other members of the community. A sliding scale of fees has been adopted. Early application for use of this service is advised as there is a waiting list in existence.

Evening childcare

Evening care until 10.00pm is available for children between the ages of 0-14 years at reasonable rates on a casual basis. Please contact the Childcare Service on 819 8519 or the Equity Unit on 819 8804 for further information.

Computer Services and Information Technology (CSIT)

Acting Manager
A. Young, BEng, MEng, MIREE
E-mail: Allan.Young@swin.edu.au

General enquiries
819 8509
E-mail: enquiries@swin.edu.au

The Computer Service and Information Technology group is part of the Division of Information Systems which was established in 1993. The group is responsible for the provision of computing and communications services to the entire University community. The group's mission is to support the University's teaching, research and community
objectives through the application of information technology and services.
The group is customer focused and provides a range of direct customer services as well as supporting the underlying computing and communications infrastructure. The organisation of the Computer Services and Information Technology group reflects the balance between core specialisation and the need to provide customer oriented services.

Access to the systems and network services provided by CSIT is available on application to the group via the Help Desk. While supporting general access to the University's networks and computing resources priority is given to research and undergraduate students where such access is a mandatory requirement of their course of study. A Network Access and Code of Practice document explains the services provided to users and the conditions governing their use. This document can be obtained from the CSIT via the Help Desk.

Facilities
The facilities group is responsible for the management of the Computer Access Laboratories in the West Wing and in the Engineering Building (EN402). Over 100 PCs are provided in the West Wing laboratory and are available to all University students and staff. Connected to the University's local area network a range of software packages are available through the West Wing file servers and remote departmental file servers.

A smaller laboratory located in the Engineering Building, EN402, provides a laboratory which is specifically provided for supervised teaching applications and must be pre-booked.

Opening hours
Opening hours during teaching periods are:

West Wing (see map)
Monday - Friday: 8.00am-11.00pm.
Saturday: 9.00am-5.00pm.
Sunday: 9.00am-5.00pm.

EN402
E-mail: Ken@stan.xx.swin.oz.au.

Customer Liaison
Customer liaison provides the all important interface between the computer service provider and consumer. The customer liaison group is responsible for the definition and provision of new services and the effective maintenance of existing services. With respect to existing services the customer liaison group is responsible for the operation of the Help Desk which provides a centralised contact point for customer queries, fault reporting and new services.

Also attached to the customer liaison group is responsibility for technical publications and training services for the range of products supported by Computer Services and Information Technology.

Help desk
Telephone: 819 5222
E-mail: help@swin.edu.au

PC support
The Computer Services and Information Technology group manages a central PC support service. This service provides first level hardware maintenance and software support to the Higher Education, TAFE and Corporate divisions. In addition to maintenance services, the PC Support group is able to provide advice on the selection of PC hardware and software, and assist in the installation and configuration of recommended computing and peripheral equipment. The group is also responsible for providing access to the University's local area network and the centrally managed network file servers.

PC support
Telephone: 819 5222
E-mail: help@swin.edu.au

Mainframe and mid-range support
While the University has had a long history of managing large centrally controlled mainframe computing equipment, the decommissioning of the IBM 3090 in 1994 will see the passing of this era. The industry and technological trend towards downsizing has been reflected in the move to mid-range UNIX systems. The Computer Services and Information Technology group supports two UNIX based Encore Multimax systems. One of these systems is dedicated to providing the electronic cataloguing and borrowing system (DYNIX) for the Central Library, the other is a teaching machine which supports undergraduate programs in UNIX, languages such as Pascal and C. and applications such as ORACLE.

The group is also responsible for the University's Management Information System. This involves the management of the applications which support student records, finance, human resources and physical resources. Implemented on an IBM AS/400 access to these systems is provided to all teaching departments and corporate divisions.

Networks and communications
One of the major responsibilities of CSIT is the management of the University's local and wide area networks which support data, voice and video services. The wide area network consists of a high capacity microwave link between the Hawthorn and the Prahran campuses of the University. The Mooroolbark Campus is linked to Hawthorn via Telecom's Integrated Digital Services Network.

These wide area links provide seamless integration of the local area networks at each of these sites allowing access to University wide resources such as the MIS, the library online system, electronic mail and access to distributed departmental file servers. Access to the Australian Academic and Research Network (AARNet) and the extensive services available through this and the wider international INTERNET are available at all campuses via the WAN.

Local area networks at each of the three campuses are based upon the IEEE 802.3 network standard operating over fibre optic backbones and unshielded twisted pair cable to the workstation interface. The LANS at each of the three campuses connect almost 1000 personal computers and provide access to a range of Novell and Banyan file servers which support a wide range of DOS applications. Access to other computing resources is available through the campus LANS using the industry standard suite of communication protocols TCP/IP.

English Language for Migrants

Migrant Education Coordinator
L. Cutting (Prahran), 522 6957
V. Reddaway (Hawthorn), 819 8853
Swinburne offers a variety of courses and support programs for migrants, for whom English is their second language, who are:
- preparing to enrol in Swinburne or other post-secondary courses
- currently enrolled in Swinburne courses
• wanting to develop language skills to improve study and work prospects.

**Full-time courses**
Preparation for further study and work — Prahran campus only.

**Part-time, evening courses**
Preparation for further study and work and concurrent support for Swinburne students — Hawthorn campus only.

**January summer school**
English for academic purposes (full-time program) — Hawthorn campus.

**Language support within mainstream course**
At both campuses, when circumstances allow, English as a second language (ESL) trained teachers and extra tuition time are provided for ESL students enrolled in VCE, advanced certificate and associate diploma courses.

**Independent learning**
At both campuses students have access to materials for independent study (self-access for language development purposes; audio, computer-based and text-based materials are provided).

**Non-permanent residents**
Courses are run by the English Language Centre for international students and others who are in Australia on a temporary visa. Enquiries: International Student Unit, 819 8151.

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### Hire of Swinburne facilities

Outside groups wishing to use Swinburne facilities should contact Planning and Information on 819 8686 to discuss their requirements. Swinburne lecture theatres and classrooms may be booked for use by outside organisations.

**Swinburne Conference Centre**
The Swinburne Conference Centre is located at the north-west end of the campus. It is a pleasantly situated centre, ideal for small conferences, seminars and training courses. It comprises a large seminar room, one smaller discussion room and a dining room, all available for outside hire. Enquiries about the facilities available or booking of the centre should be directed to the office staff on 819 8686.

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### International Student Unit

**Associate Dean (International Students)**
I.A. McCormick, BComm(Melb), MAdmin(Mon), FASA, CPA

**Deputy Manager**
C. Chu, BA(Mon)

**Overseas Student Advisors**
T. Bourekas, BA(Mon), GradDipBIS(SUT)
B. Hammond, AssocDipTravel&Tourism(MIT)
S. Hammond
G. Hennequin, BEd(Melb)
M. Lui, AssocDipOffSec(PIT)
D. Pun, DipMassComm(HBC)

**Secretary**
W. Wan, BScEcon(Lond)

**Location**
473 Burwood Road, Hawthorn, 819 8151, 819 8647

The International Student Unit was established to provide a focal point for Swinburne's international activities. This includes being responsible for all matters relating to the implementation of Swinburne's international program and coordinating academic links with overseas tertiary institutions.

All enquiries for study at Swinburne by non residents of Australia should be directed to the unit to ensure that Australian government admission policies are followed. The coordination of on-going welfare of overseas students is also a responsibility of the unit.

The unit also operates a student hostel for international and Australian students.

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### Learning Services

**Director, Learning Services (Acting)**
K. Anderson, DipEE, TTTC, BSc(Melb), MA(Brad)

**Learning Resources Production Unit**

**Head**
R. Philp, ABCTechCert
N. Alwis, City & Guilds, FullTechCert(Lond)
M. Clarke, Accounting 1A&2A(TAFE)
G. Dudley, CertTech(AC)(RMIT)
K. Salehi, BA(CIT), DipFSR(RMIT)
G. Thomson
T. Young, BAppSci(Phot)(RMIT)
Classroom and Technical Support Unit

Head
R. Cameron, TechCert(RMIT), AssDipAppSci,
MediaProd(VicColl)
G. Hay, COT(AVMedia)
J. Mansfield
N. Vargas
T. Weiss, CertTech(RMIT)
M. Young

Staff Development Unit
B. Hawkins, BA(NewEng), MEd(Melb)

Functions of Learning Services
Learning Services provides the following learning and instructional technology services to Swinburne:
- learning resources production;
- instructional technology and curriculum advice;
- interactive multimedia learning facilities;
- educational computing services;
- academic staff development;
- classroom and technical support; and
- teaching/learning research.

Classroom and Technical Support Unit
The Classroom and Technical Support Unit is responsible for equipping teaching spaces with facilities which permit the presentation of computer, video and audio output, overhead transparencies, 35mm slides and 16mm motion films. It also provides audiovisual equipment for loan to teaching staff. To maintain and repair these facilities and equipment, the Classroom and Technical Support Unit operates an extensive, well equipped workshop. Staff are available to assist with setting-up, operating, repairing and booking equipment as necessary.

Learning Resources Production Unit
The Learning Resources Production Unit is the largest component of Learning Services. It is responsible for producing:
- tutorial, documentary, drama, animation and graphics type material for distribution on videotape, videodisc, in digitised form on multimedia computers broadcast or delivered via ISDN-type facilities;
- tutorial, documentary, drama and music type material for distribution on cassette tape, compact discs, in digitised form on multimedia computers or delivered via ISDN-type facilities;
- computer based learning materials (eg. tutorials and simulations to run on personal workstations or on larger machines accessible via the network), computer managed learning software (eg. item banks for test generation, course management databases), software for interactive multimedia courseware, and other educational software;
- still images for delivery as 35mm slides, as overhead transparencies, in printed form, or as part of a computer based learning program, videotape, videodisc or multimedia presentation;
- animated graphic sequences for use in video programs and computer based learning materials.

The Learning Resources Production Unit also provides photographic, film processing, off-air recording, dubbing and post-production services.

Staff Development Unit
The Staff Development Unit assists academic staff to update their knowledge and skills in teaching and learning, particularly in relation to the use of technology in tertiary education.
Inter-library Loans
M. Wilkinson, AssocDipAppSocSc(LibTech)

Mooroolbark Campus
T. Olson, BA(Hons)(Mon), GradDipLib’ship(RMIT), AALIA

Prahran Campus
Campus Librarian
R. Humphries, BA(Hons)(Birm), GradDipLib’ship(RMIT)
Information Services Librarian
M. Fox, BEd(Lat), AALIA
Circulation Librarian
L. Cantrill, BA(Lib’ship)(CCA)
Access Librarian
E. Dunstan, BA(Melb), DipEd(Melb), GradDipLib’ship(MCAL)
Liaison Librarians
M. Thomey, BA(Mon), DipEd(Mon), GradDipLib’ship(RMIT)
G. Turnbull, BEd(Lat), GradDipLib’ship(RMIT),
GradDipTeach(BrisLoa), AssDipFineArts, CertCommIII(QCA)

Inter-library Loans
J. Pearson, CASS(LibTech)
Administration
L. Fry
R. Clements

Libraries on each of the three campuses provide learning and information resources and services in support of Swinburne's teaching and research programs.
The combined collections include over 200,000 books, 3,000 periodical titles, print and CD-ROM indexes and abstracts, and a large collection of audio and video tapes, slides, interactive videodiscs and computer software. All materials in the collections are available for use in the libraries, and most may be borrowed. Access to all collections is facilitated by a shared online catalogue, and an inter-campus loan service.
The range of resources available is extended through reciprocal borrowing arrangements with most other university and TAFE libraries, and a number of networked access arrangements to electronic databases.
Library staff work closely with teaching staff to develop resources and help students to make best use of them. Programs designed to develop students' information skills are an integral part of most courses. Individual assistance is provided at several service desks on each campus during the extensive opening hours. A range of printed guides to resources and services is also available.

Opening hours
Opening hours during teaching periods are:

**Hawthorn Campus**
Tel: 819 8330
Monday-Thursday — 8.45am-10pm
Friday — 8.45am-8.30pm
Most Saturdays, some Sundays, ANZAC DAY, Queen's Birthday, Show Day, Melbourne Cup Day.

**Mooroolbark Campus**
Tel: 728 7115
Monday-Friday — 8.45am-5pm

**Prahran Campus**
Tel: 522 6998
Monday-Thursday — 8.30am-8.30pm
Friday — 8.30am-5pm
Queen's Birthday, Melbourne Cup Day.

Check library guides and notice boards for weekend and public holiday times, non-teaching periods and changes.

Summary of Library borrowing regulations and conditions of use

Persons entitled to use the library
Each campus library is available for the use of all full-time and part-time students and staff of Swinburne University of Technology who accept the library regulations. Members of the general public, including past students and staff, are welcome to read or use the facilities within the library provided that they also accept the regulations. They may also borrow from each library on payment of a membership fee to the Swinburne Library Information Service.
The Swinburne Librarian, Campus Librarian, or the senior staff member on the premises, may refuse entry to the library to any person not registered as a borrower.

Persons entitled to borrow from the library
Members of the Council of Swinburne.
Full-time and part-time staff members of Swinburne University of Technology.
Full-time and part-time students of Swinburne University of Technology.
Approved borrowers from other institutions with which Swinburne has reciprocal borrowing agreements.
Registered members of the Swinburne Library Information Service.
Such other persons or organisations as the Swinburne Librarian or Campus Librarian may from time to time approve as borrowers.

Photocopying
Photocopying machines are available in the library. Users must note the relevant provisions of the Copyright Act and abide by them.

Borrowing
All material borrowed must be recorded at appropriate issue points before the patron enters the security gate to leave the library. The due date is stamped on the item or on a transaction slip when it is borrowed. The borrower accepts responsibility for the care of any item borrowed and for its return in good condition on or before the due date. The library reserves the right to recall any item on loan before the expiration of the normal loan period.
Most library materials may be returned to any of the campus libraries. Videocassettes must be returned to the campus from which they were borrowed.

Identity cards
A current Swinburne identity card must be presented each time an item is borrowed, otherwise service will be refused. Cards are not transferable and lost identity cards must be replaced immediately.

Borrowing periods
Students: the normal loan period for students is a fortnight. This period may be extended for a further fortnight provided that the item has not been reserved by another user and that it is not overdue.
Staff: the normal loan period for staff members and higher degree students for most library material is four weeks. This period may be extended for a further four weeks provided that the item has not been reserved by another user and that it is not overdue.

Reserve collections
Most material in these collections may be borrowed for a period of two hours for use within the library. A small number of items are available for overnight loan.
General information

Items not available for loan outside the library
These include material in the reference collection, rare books and archive collection, and any items marked ‘Not for loan’ or ‘Display’.

Periodicals and audiovisual material
Details of loan conditions for items from the periodicals and audiovisual collections are contained in the campus library guides.

Reservations
Items on loan may be reserved at any of the campus libraries. Reservations for items on loan will not be accepted from a person who already has the item or another copy of the item on loan.

Lost or damaged material
If an item is lost or damaged this must be reported immediately to the library from which it was borrowed. If the item cannot be found after a reasonable search the borrower is responsible for the replacement cost plus a processing charge or the cost of repair.

Penalties
Each campus library issues loans subject to the imposition of penalties for late return and non-return of items. When an item falls overdue, borrowing privileges are suspended at all campuses. Further details of these penalties are contained in the campus library guides. For students the issuing of results and eligibility for re-enrolment and awards is dependent upon all outstanding library penalties being resolved. For staff, all material on loan to them must be returned and all penalties resolved before they leave employment with Swinburne.

Rules for general conduct
Eating, drinking and smoking are not permitted in areas of the library open to the public.
Playing games is not permitted in the library.
Bags and cases may be brought into the library and must upon request be presented for inspection at the library exit.
An atmosphere of quiet must be maintained in the library so that it is at all times a place conducive to independent study and quiet reading. Discussion is permitted only in areas so designated.
Any person who, in the opinion of a library staff member and the senior staff member on the premises, repeatedly fails to observe any of the above rules, or who engages in anti-social behaviour or damages library property in any way, must produce a Swinburne identity card on request.
Offenders will be responsible for all damage caused, and will be subject to disciplinary action which may result in exclusion from the library and suspension of borrowing privileges.
If a student is dissatisfied with any punitive action taken by the library a request for it to be reviewed in accordance with Swinburne’s official ‘Grievance Procedures’ can be made.

Power to alter rules
One or more of the rules may be changed from time to time by the Vice-Chancellor or Deputy Vice-Chancellor, on the recommendation of the Swinburne Librarian.
At the discretion of the Swinburne Librarian one or more of the rules may, under special circumstances, be temporarily suspended. Any change to or suspension of any rule shall be reported at the earliest opportunity to the Vice-Chancellor or Deputy Vice-Chancellor.

Multi-modal Learning
Multi-modal Learning has been introduced to Swinburne to enhance learning options for students throughout the University. The MML Project is based at the Mooroolbark Campus and is focused on the Applied Science Degree (Mathematics and Computer Science) for the pilot implementation which began in 1993. Multi-modal Learning, which means learning in many ways, will be progressively extended over the next several years.
A multi-modal learning course consists of a variety of methods and media of instruction including but not limited to lectures and tutorials. Central to the University's capacity to provide multi-modal learning experiences is the possession of a personal portable computer (which has electronic telecommunication linkage to the University) by all students in the program. Students are connected to the University facilities and staff via their computers when they are off campus, but the personal portable computers are also used in all classes on any campus. Multi-modal Learning courses are fully documented in Learning Guides which give full details of all aspects of each subject so that students may optimise study locations and arrangements. When multi-modal learning has been extended to many courses it will be possible for students to progress through study programs at varying rates to suit individual capacities and needs.
Multi-modal Learning facilitates the use of Learning Centres being established by the University to reduce the travel requirements for attendance of students and staff whilst maintaining and enhancing the range of learning opportunities. Swinburne has established and equipped the first in a series of Learning Centres located at Glenfern Secondary College, Ferntree Gully, and tutorials and learning resources are available through the Centre.
Multi-modal Learning provides the opportunity for staff and students to employ Computer Managed Learning (CML) where appropriate and to use advanced computer software (programs or instructional packages) in any class or at home. MML allows students to complete Swinburne or other library searching via telecommunication from home or other locations.
Swinburne University is committed to conversion of courses to multi-modal delivery and its provision is continuing to be implemented from the Mooroolbark Campus in 1994.

The National Centre for Women: Employment, Education and Training
The National Centre for Women (NCW) is an initiative of Swinburne University of Technology. Established in 1993, the Centre has evolved from the Advising Centre for Women (ACW), a three year government-funded project which aimed to increase the participation and retention of women in non-traditional career areas.
While the National Centre for Women shares the ACW focus on gender and non-traditional career paths for women, it now has a strategic, rather than service delivery role, and has a national, rather than State-wide focus. For example, the NCW now undertakes consultancy on gender related issues (particularly in the area of women in non-traditional areas), conducts research relating to gender issues in employment, education and training (particularly in areas
which have traditionally been dominated by men) and develops resources which will enhance women's prospects in the areas of employment, education and training. Funding for the National Centre for Women has been initially provided by Swinburne University of Technology, which has encouraged the Centre to adopt a "small business" philosophy. Consequently, the Centre is now involved with "fee for service" activities. The Centre continues to seek corporate sponsorship and government research funds, and aims, eventually, to become self-supporting. The Centre is located at 463 Burwood Road, and enquiries are welcome. Phone contact is (03) 819 8633.

Office of Research and Graduate Studies

Research Coordinator
J. Baird, BA(Hons), BLitt(Melb), MBA(RMIT)
The Office of Research and Graduate Studies' mission is to encourage and facilitate research and development activities by Swinburne staff and postgraduate students. It provides a University-wide prospective on research at the University. There are four key service areas for postgraduates: research at Swinburne; PhD study; scholarships; and research funding opportunities.

Research at Swinburne

As a first point of contact, the Office can help prospective postgraduate students to identify who to contact about research study at Swinburne. The Office provides advice on University policies for the conduct of research and the implementation of Swinburne's Research Management Plan. It also published Swinburne's annual Research Report, which provides an overview of the University's major research centres, research interests of staff, and details of current research projects.

Swinburne has five major designated research Centres:
- Centre for Applied Colloid and BioColloid Science
- Centre for Computer Integrated Manufacture
- Centre for Applied Neurosciences
- Centre for Urban and Social Research
- Energy Systems Engineering Centre

PhD study

The Office is responsible for the administration of PhD degrees. It provides prospective PhD students with a variety of information on PhD study including: details about admissions to candidature; expected duration of candidature; progress report requirements; HECS exemptions; scholarships; guidelines for thesis presentation; guidelines for supervision; and University policies on research.

Scholarships

The Office provides information, application forms and guidelines for a number of Australian scholarships for PhD and research masters degrees. Information is also available on other scholarships offered by Australian government authorities and non-profit organisations, and on overseas scholarship opportunities.

Research Funding Opportunities

The Office provides information on research grants and other opportunities for research funding, as well as details of programs where graduates are employed specifically by an organisation to conduct research. A fortnightly Research Brief detailing current opportunities is published by the Office and distributed widely around the University.

For further information about PhD study and scholarships, phone Margaret Tarr on 819 8238.

For further information on research at Swinburne, phone Jeanette Baird on 819 8799.

Parking

Enquiries, Buildings, Grounds and Services

Hawthorn campus
819 8760
Mooroolbark campus
728 7111
Prahran campus
522 6748

Limited off-street parking facilities are provided for full-time and part-time students.

Conditions of use

Use of car parks is strictly at the owner's risk and is subject to:
- a current Swinburne parking permit or sticker valid for the car park in question being clearly displayed on the windscreen;
- availability of space in the car park;
- the car being within a marked bay;
- any fees or charges being paid;
- the drivers observance of parking signs or directions given by any of Swinburne Parking or Security Officers.

Parking permits

Available from Buildings, Grounds and Services. Student identity card is required.

Part-time students

Evening and other part-time students may not leave cars in Swinburne car parks during the day while they attend work.

Short course students

Students require a parking permit issued by the office organising the course. Availability of space is not assured.

Hours of access

The main car parks are open at 7.45am and close at 10.00pm. Car parks on some campuses are open twenty-four hours. Students are warned against leaving cars in parks overnight.

Infringement of parking rules

Failure to comply with parking regulations could incur a Parking Infringement Notice of up to $40.00. Under the Road Safety Act 1986, the fines are enforceable in court. Those who abuse the system are also liable to have their parking privileges withdrawn and the parking permits for their cars revoked.

Students with disabilities

Consideration is given to the provision of reserved spaces for students with physical disabilities. Enquiries should be directed to Buildings, Grounds and Services, Hawthorn 819 8760 and Prahran 522 6748.

Motorcycles and bicycles

Campus motorcycle parking and bicycle rack locations can be obtained from Buildings, Grounds and Services at each campus.
Car pooling
Consideration is given to the provision of reserved spaces for students car pooling at Hawthorn campus.

Location of car parks
On-campus parking areas are indicated on the map on the inside back cover of this Handbook and on the reverse of parking applications and permits.

Possible changes
Swinburne is developing a new University — wide parking policy for staff and students on all campuses and all the above parking regulations are subject to change.

Publicity and Information Unit

Head
N. Manning, 819 8847

Handbook and course brochures
S. Niner, BA(VicColl), GradDipBIT(SIT), 819 8548

Information office
819 8444

The role of the Publicity and Information Unit is to publicise, both internally and externally, the activities of Swinburne University. The specific functions of the unit include the provision, production and distribution of information relating to Swinburne courses, staff and campus activities. This is achieved through media liaison and advertising, specific course brochures and external publications such as Swinburne News, the annual Swinburne Handbooks, an internal staff newsletter and the staffing and resourcing of the Information Office.

One of the unit’s highest priorities is to actively promote Swinburne’s public profile and the quality and range of education offered. To this end, the unit plays a major role in the co-ordination and organisation of exhibitions which includes Swinburne’s annual Open Day.

Student and Educational Services

Manager
Z. Burgess, BA(Mon), MEd(Couns)(LaT), GradDipEdPsych(Monash), MARS, VAFT, AIMM
Administrative Officer
E. Jolley

Coordinator, Projects
R. MacDonald, BA(Melb), DipEdPsych(Mon), MARS

Learning and Educational Development Unit

Coordinator
C. McLeod, BBSc(Hons), DipEd(LaT), MEdPsych(Melb), MARS

Learning Skills Counsellor
J. Hastings, TP/TC(StC), BA(SIT), GradDipEdPsych(Mon)

Student Counselling (Hawthorn)

Coordinator
F. Oberklaid, MA, MEd(BosU), MARS, AIMM

Student Counsellor
B. Jenkins, BEd(Vic), GradDipApPsych(Couns)(SIT)

Overseas Student Counsellor
H. Kalaboukas, BA(Melb), BEd(Couns)(LaT), MARS

Administrative Officer
J. Ralph

Housing, Part-time Employment and Financial Advice (Hawthorn)

Coordinator
B. Graham, BAppSc(Pharm)(TCAE)
Administrative Assistant
K. Morey, BA(SIT)

Careers Services (Hawthorn)

Coordinator
R. Ware, BA(LaT), DipEd(MSc), GradDipCareers(VicColl)

Career Counsellor
R.C. Waite, BA, DipEd(FLinders), DipEd(Couns)(SIT)

Schools Liaison Officer
L.E. Baron, BA(RMIT), DipEd(LaT)

Careers Information Officer
K. Bevis

Employment Program Officer
S. Davis

Student Health Service (Hawthorn)

Coordinator
J. Fischer, RN, RM(Vic)(UK), RN(USA)

Medical Officer
S. Clarke, MB, BS(Lond)

Sister
A. Hart, RN(Vic)

Administrative Assistant
J. Wright

Mootoolbark campus

Coordinator
M. Manel, BSc(Stirl), BEd(Couns)(LaT)

Prahran campus

Coordinator
D. Balgovind, BA(Hons)(Qld), DipEd(Melb), MARS

Student Counsellor
M. Galante, BA(Monash), BSoCWork(Mon), AASW

Nurse
W. Avery, RN, RPN(Vic), GradDipCommHealth(Deakin)

Medical Officers
J. Heath, MB, BS(Mon), DipRACOG
M. Philip, MB, BS(Mon)

Housing and Employment Officer
N. Harley

Administrative Officer
S. Morgan, AssDipAdmin&SecStudies(SCT)

The following services are available to all students and staff:

Learning and Educational Development
Learning and Educational Development Services comprises a range of academic support activities to enhance learning and teaching experiences of students and staff. Services are provided within an educational psychology framework and educational research supports the broad range of consultancy and programs.

Services for students include:
- learning enhancement programs within academic courses;
- learning skill development workshops;
- individual learning counselling and programs;
- psycho-educational assessment;
- tertiary transition and learning workshops;
- tutor training.

Services for staff include:
- professional development programs;
- teaching and learning enhancement seminars;
- educational research and grant submission advice;
- consultancy services for course evaluation and development;
- individual counselling re TAFE and tertiary teaching;
- teaching induction programs.
Career Planning and Industry Liaison
The Careers function offers a range of services to assist with choice of a career, assess interests and abilities, investigate employment options, improve job hunting skills, and establishing contact with potential employers.

Services for students include:
- career counselling;
- resume writing;
- employment interview preparation;
- career/employment information and resources;
- vocational assessment.

Services for staff/community include:
- course information;
- school liaison;
- career development workshops;
- resource development for careers practitioners;
- individual consultations.

Counselling, Housing and Part-time Employment and Finance
Programs are offered by the counselling and housing and part-time employment services. They are designed to enhance the social and psychological development of students and staff. Personal development and independent living programs and workshops are offered to students and staff throughout the year; with a focus on activities for first year students both from Australia and overseas. These incorporate personal counselling and skills based group programs and advice on housing, part-time employment, loans advice and financial management.

Services to students:
- personal development;
- practical living workshops;
- student loans;
- individual counselling for Australian and overseas students.

Services to staff
- crisis intervention;
- cross cultural communications training;
- interpersonal skills development programs for staff groups;
- individual consultations.

Health
This is a confidential nursing and medical service offered to all Swinburne students and staff. Emphasis is placed on health education and promotion. The nursing staff are available for consultation, treatment and referral. Medical officers will be available by appointment on a sessional basis each day.

Emergency services are always available. These consultations will be bulk-billed to all Medicare card holders. Nursing and medical treatment is available for international students.

Services to students and staff include:
- information on health related matters (nutrition, contraception);
- health counselling;
- medical consultancies;
- workshop information;
- CPR training;
- immunisation;
- sight and hearing tests;
- community health programs.

Contact details
The majority of services listed below at the Hawthorn campus are available at the Lilydale campus and the Prahran campus also. Swinburne students can use services at any campus. For more detailed information phone the numbers listed below.

Hours of opening and location at each campus are:

Learning and Educational Development (Hawthorn)
Room BA206, Ground Floor
Business and Arts Building
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 819 862218 8500

Career Planning and Industry Liaison (Hawthorn)
463 Burwood Road, Hawthorn
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 819 8521

Counselling (Hawthorn)
Room EW108, enter through Conference Centre, Swinburne Walk
Hours: 9.00am-5.00pm (Monday, Tuesday and Friday)
9.00am-6.00pm (Wednesday and Thursday)
Phone: 819 8025

Housing, Employment and Finance
Room BA206, Ground Floor
Business and Arts Building
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 819 8882

Health (Hawthorn)
Student Health Building
Hours: 8.45am-5.00pm (Monday-Friday)
Phone: 819 8483
Medical Practitioner by appointment
Nursing staff available at other times

Mooroolbark campus
Administrative Building MA7
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 728 7103

Prahran campus
Building U, Level 2
Hours: 9.00am-5.00pm (Monday)
9.00am-6.00pm (Tuesday, Wednesday and Thursday)
9.00am-4.00pm (Friday)
Phone: 522 6734

Student assistance schemes
AUSTUDY
Generally, AUSTUDY provides financial help, on an income and assets-tested basis, to students who are 16 years of age or over and who are studying approved full-time secondary and tertiary studies. Some part-time students receiving a sole parent pension may also receive the educational supplement.

Helpful hints about AUSTUDY
- Pick up your application form and information booklet from AUSTUDY, a CES officer or from your campus.
- Read the information booklet carefully.
- If having read the booklet you still have questions, then seek help from the Financial Adviser on campus.
- If your friends, family or family accountant say you are not eligible, don’t assume they are correct — the eligibility criteria are complex and students’ circumstances vary.
- Don’t assume that you are not eligible, if in doubt put in an application anyway.
- Fill in your application form carefully — mistakes or omissions will mean delays in receiving your first payment.
If you qualify for living allowance at the independent rate, support from their families. Ask at Student and Educational Services for more information.

**ABSTUDY**

ABSTUDY provides financial help for Aboriginal and Torres Strait islander students who want to stay at secondary school or go on to further education. It can help school children and also adults returning to study.

**AUSTUDY and ABSTUDY** are administered by the Department of Employment, Education and Training.

**Young homeless allowance**

This scheme may assist students who do not receive any support from their families. Ask at Student and Educational Services for more information.

**Dependent spouse allowance**

If you qualify for living allowance at the independent rate and you have a spouse and child who are dependent on you, you may receive an additional allowance. The allowance is also payable for a dependent de facto spouse if there is a natural or adopted child of the relationship who is dependent on you. Some students are eligible for a fares allowance.

**Family allowance supplement**

Students who are eligible for a living allowance and who have a dependent child may receive Family Allowance Supplement (FAS) from the Department of Social Security. FAS will be paid to eligible clients at the maximum rate, free of any income test and in addition to family allowance. It is not taxable. You can find out more details and how to apply from your local DSS office.

**Child care assistance for sole parents**

Contact the Department of Health, Housing and Community Services for information.

**Health Care Card**

Students who qualify for AUSTUDY may also be eligible for a Health Care Card from the Department of Social Security. Recipients of this card are eligible for a range of concessions.

**Student loans**

With approval of the Loans Fund Committee, financial assistance may be obtained for full-time students from the following loan funds:

- Commonwealth Help for Needy Students Loan Fund
- Special Assistance for Students Program
- Student Aid Fund
- Rotary Swinburne Bursary Fund
- Overseas Student Loan Fund

Emergency, short term loans are available to full and part-time students from the student union aid fund.

**Concession tickets**

Concession tickets are available for travel to and from Swinburne on public transport. Students who wish to purchase these tickets should go to the Student Administration Office to complete the necessary forms. Only full-time students are eligible for fare concessions. Not available to full fee paying overseas students. Students must present their student card when applying for a concession form. Australian Airlines and Ansett Airlines concessions are available from The Contact Centre, Student Union, or from STA Travel Agencies. Full-time students are also eligible for an international student card. Available from The Contact Centre, Student Union.

**Student union**

**Brief description**

The Student Union is a legal expression of the Student body identified with Swinburne. The primary function and focus of the organisation is to represent the members in the common context of their relationship with Swinburne and the Union — as students, and in their education. The second focus of the Union is to provide services, for the members within the framework of effectiveness, convenience and need.

The Union in representing the members operates within the realms of the campaign organiser, consumer advocate and lobbyist. Successful outcomes have been dependent on good student representation and a core of professional staff working together, developing policy and precedent through careful implementation. Policy developed and decisions implemented are mindful of past and future membership. Incorporation has breathed life in perpetuity, into this organisation, which has become increasingly effective by the year in serving the membership.

**Membership and its aims**

Membership to the Union is based on enrolment and payment of the General Service Fee. The purposes for which the Union is established are:

1. to advance the social, educational and general welfare of the student body of Swinburne and to provide services for the student body;
2. to represent and safeguard the students in matters affecting their interests and privileges and to afford a recognised means of communication between the students and the authorities of Swinburne and other educational bodies;
3. to promote, encourage and co-ordinate the activities of student committees and societies;
4. to promote and foster a corporate spirit amongst the student body;
5. to strive for wider recognition and greater appreciation of the standard of all academic awards of Swinburne.

The 1993 Executive of the Union consists of:

- President: Thomas Koska
- Vice-president: Walter Bird
- Activities Director: Ashley Cook
- Education Director: Lloyd Bevan
- Media Director: Laima Needham
- Finance Director: Mathew Bosworth

The role of the Executive is to control and manage the business and affairs of the Union. The meetings of the Executive occur at least once a month from February to November and are open to all members.

The affairs of the Union fall principally into the following areas: education and welfare services, social activities, and media. These areas are governed by management committees, whose responsibility it is to develop policies of the Union in the areas of their activity. The management committees consist of: the relevant Executive member as Chairperson, two to three members of the Union Executive, two to four members elected from the student body. The
Executive at the monthly meeting receives and considers the policy submitted by the management committees. In March or April of each year the Executive calls an Annual General Meeting to present the preceding years audited financial statement. In October or November of each year the Executive convenes a Budget Meeting. At this meeting the proposed Budget for the next financial year is presented by the Executive to the student body for their approval. Further, the Executive reports on the activities of the Union for the period since the preceding Budget Meeting. All student members are eligible to stand and vote in elections and all have the same rights in respect to the Union and thus are entitled to use the services provided by it.

Orientation week
Orientation occurs during the first week of academic classes. During orientation a diversity of entertainment is provided to encourage students to become involved and participate in the campus activities. Orientation week provides the opportunity for students to familiarise themselves with services and the new University studying environment and to build support networks and confidence. It facilitates the establishing of friendships with other new and returning students. A program of activities for the week is available prior to the commencement of Orientation.

Activities
This department is a sub-unit of the Contact Centre and the responsibility of the Activities Office. In conjunction with the management committee the Activities Office develops, organises and presents the social programmes for the year. This unit works closely with Clubs and Societies in order to promote activities jointly between clubs and the Union. The Activities Office is located at The Corner Cafe.

Clubs and societies
Another sub-unit of Contact, the Clubs and Societies office is located in the Contact Centre. This unit’s responsibility is to promote the involvement of students in the Swinburne community through participation in groups with a common interest. The Clubs and Societies office will assist with queries regarding the starting of Clubs, affiliation and support with resources.

Union Bus
The Student Union provides a Toyota Hiace (12 seater) van for use by clubs and societies for their functions if required. Bookings can only be made at the Contact Desk. It serves as a night bus to transport students (after daylight hours) to their respective place of residence or vehicles, this eliminates risk of harm to a majority of women students who utilise this service.

Personal accident insurance scheme
All students enrolled in Swinburne and who are members of the Union are automatically covered by accident insurance. This insurance scheme covers accidents, twenty-four hours a day on or off campus, in the event it relates to activity associated with Swinburne. For further details, please contact the Accountant in the Union Office.

Union office
This is situated on the 4th level of the Union Building. Various services are provided here including room bookings, Legal Advisor bookings, insurance claims, facsimile and general information. Union personnel that are located in the Union Office include the President, Administrative Officer, Manager and Accountant. Telephone numbers: 819 2156, 819 2656, 819 2966, 819 8520, 819 8553.

Contact/information desk
The Contact/Information Desk located in the Contact Centre is the ‘nerve centre’ of the Student Union for information on Union services, activities and coming events — in effect a directory of all Union services. Students will find a ‘Friendly Contact Worker’ who will provide assistance on how to survive at Swinburne. The desk also has listings of various off-campus groups which you may wish to become involved with.

The Desk operates as the ticket sales point for Union activities, and sells t-shirts, windcheaters, and other Union memorabilia.

The Australian Buying Advisory Service (ABAS) is available at no charge to students. This service guarantees that the price you have been quoted is in fact an unbeatable offer. So if you are considering buying a camera, television, stereo, etc., see us.

Reading room/photocopying service
The room is designed for quiet reading and discussion, in a non-smoking environment. Newspapers, magazines and information on various groups, issues and organisations are located in this area. Also located adjacent to the lounge are a bank of photocopiers. The copiers produce good quality A3/A4 copies at a very competitive price. It is located in the Contact Centre.

Tool library
The Tool Library is located in the Contact Centre, telephone 819 8291. As the library is a non-profit operation, its hire rates are very reasonable (1/2 of the retail price). All equipment hire requires a deposit and student/staff ID. Library catalogues are available from the Contact/Information Desk, Tool Library and the Union Office.

Equipment available includes: lawn mowers, mulchers, engine tune-up kit, arc welder, brush-cutters, wallpaper remover, auto tools, orbital sanders, percussion drills, belt sanders, barbeques, PA system, tents and ruck sacks.

The Greenhouse Coffee Lounge
Situated on the third level of the Union Building, this is a comfortable and popular lounge specialising in the cappuccinos, hot chocolates and herbal teas. The Greenhouse serves quality cakes and pastries and lunch time specials of pasta gourmet open pies, quiches and salads. Ideal for those who want strong coffee, a quiet chat and an absence of large crowds. Seats 100.

Opening hours: Monday-Thursday 9.30am-3.30pm, Friday 9.30am-2.00pm, Telephone: 819 8530.

Union Caf
The “Caf” provides an extensive range of foodstuffs including hot and cold drinks, sandwiches, hot take-away food, hot dogs and confectionary. With prices designed for the student pockets and home of the famous “budget meal” the Union Caf is conveniently located on the ground of the Union Building (next to the Bookshop). Seats 100.

Opening hours: Monday-Thursday 8.00am-8.00pm, Friday 8.00am-3.00pm, Telephone: 819 8823.

The Ethel Caf
The largest cafeteria on campus, the Ethel is located on the third floor of the Union Building adjacent to the Coffee Lounge. This cafeteria provides a large variety of hot and cold meals, a variety of vegetarian dishes and a chef who will cheerfully cater for an individual’s special diet needs.

The Ethel has the table space for large groups of students to chat over coffee or lunch. Seats 300.

Opening hours: Monday-Thursday 8.00am-3.30pm, Friday 8.00am-2.30pm, Telephone: 819 8172, 819 8174, 819 8247.
The Corner Cafe
Located on the corner of John and Wakefield Streets, this extremely popular cafeteria provides an upmarket range of salads, gourmet sandwiches and snacks at a reasonable price. The Corner has a clean and pleasant environment and is convenient to both University and TAFE students and staff. Seats 70.
Opening hours: Monday-Thursday 8.00am-9.00pm, Friday 8.00am-3.30pm. Telephone: 819 8380.

Ethel Hall
Clubs and Societies can use the hall for their functions. Bookings must be made at least two weeks in advance. All bookings must be made on prescribed forms available from the Student Union Office.

Radio station
3SSR — Swinburne Student Radio.
Location: fourth level of the Union Building.
The Radio Station is run by a committee which consists of:
- Programme Director
- Publicity and Promotions Director
- Station Manager
- Technical Officer

3SSR provides students with a variety of music and other programs which are broadcast to a number of outlets. Students are involved in various activities at the station including production of 'on air' programs (Dj’ing) and the general running, management and organisation of station activities.
Facilities at 3SSR include a comprehensive record library, cartridge production facilities, an 'on air' broadcast studio, and various related equipment including an eight-channel mixing desk, a four-track reel to reel, a half-track mastering reel to reel and an assortment of microphones and leads.

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Clubs and Societies can use the hall for their functions. Bookings must be made at least two weeks in advance. All bookings must be made on prescribed forms available from the Student Union Office.

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Anyone interested in becoming involved in 3SSR activities should contact one of the committee members in the radio station offices located on the fourth level of the Union Building.

Legal Adviser
The Student Union provides a free legal service for full and part-time students. The solicitor is available every Tuesday during the academic year. Appointments must be made at the Union Office, on 819 8520.

Education, Welfare and Research Department
All matters pertaining to the quality of education and the welfare of students on campus are handled by this department. The Union employs a Coordinator who oversees the activities of this department. The Coordinator who is available for consultation, on any facet of student's education, or welfare, is available on the 4th floor of the Union Building. There are three sections within this department:

Student Appeals and Advocacy Officer
The Union employs a full-time officer to assist students who believe they have been treated unfairly, or been discriminated against by a University staff member(s) (whether teaching or administrative) or by a department, school, faculty etc. of Swinburne itself. Unfair treatment can arise in assessment, enrolment, in the way in which a complaint is dealt with, access to services such as the library, amongst other things. Whatever the circumstance, if you feel that you have been disadvantaged ask the Union for assistance.
The Student Appeals and Advocacy Officer will also prepare the case of a student who has to go before a University tribunal, such as a Progress Review Committee or Exclusions Board. Depending on the circumstances, the Officer is also able to directly represent students before University tribunals. Whilst the primary role of this Officer is to assist students with problems encountered in the course of their study at the University, students can also come to the Union if a problem arises outside the University which they feel they need Union help with.

All discussions are completely confidential. The Officer is available to all students, be they TAFE or Higher Education. The Student Appeals and Advocacy Officer is located in the Education Unit, on the 4th floor of the Union Building.
Phone: 819 8553. Fax: 819 2256. E-mail: malcolm@union_2.su.swin.edu.au.

Education and Welfare Research Unit
This evaluates Student Services and also conducts the Course Evaluation Survey. The latter helps assess the quality of education that students are receiving in various subjects. The subjects covered are randomly selected every semester. However students and staff can also request evaluations. All results are confidential and only subject results are published in an Education Handbook available in March every year. The results are also forwarded to teaching staff for further analysis and comment.
The Union employs an Education Research Officer to undertake this program. This person is situated in the Education Unit.

Campaigns and Pressure Group Coordination Centre
The Union undertakes and coordinates actions against those organisations/institutions (e.g. the Government) which implement policies seen as deleterious to the welfare of students. To meet the organisational requirements of such campaigns, students volunteer their time, and the Education, Welfare and Research Committee assist these students in regard to rallies, marches, lobbying, etc. Examples of such actions are: Anti-Tuition Fees, and Stop the Closure of the TAFE College.

All students interested in participating in social action to achieve beneficial change and progress can attend the Management Committee meetings by contacting the Union Desk (Union Office), or by ringing same on 819 2966.

Student publications
The Student Union publishes a weekly news magazine called "The Swine", which primarily carries news and information pertaining to students and about Swinburne. It provides a forum for students to present and discuss their views on relevant matters.
The Student Union also publishes "Scam" on the basis of once or twice a semester. "Scam" is less news, more creative writing than "Swine" and often has a theme. There is also a yearly publication which is produced solely by female students called Bella Donna.
These publications are produced by the Student Union Media Office. Contributions by students including graphics, cartoons and articles are welcomed. If you want to learn how it's done, contact the Student Union Media Director or come to the Office. The Student Union also produces a free diary and Year planner which are available from the Contact Desk and at re-enrolment.

Club printing
Clubs and Societies can have their publicity material printed by the Student Union Contact Centre at minimal cost.
Campus Computers — Student Union Computer Centre

Campus Computers offers access to a range of computers including some with cd-roms installed. A number of popular packages including Word for Windows, MsWord for Dos, Wordperfect 5, spreadsheets and others are available.

Other services offered in the Computer Centre include:

- Resume typing
- Binding service
- Laser printing

Campus Computers offers a professional service to word process and laser print resumes for students at reasonable cost.

- A thermal glue binding service that provides excellent presentation is also available at minimal cost from Campus Computers. The covers are A4, white with a clear acetate front and are extremely hardwearing.
- Laser printing

Campus Computers also offers access to modern laser printing at reasonable per page rates.

For further information contact Campus Computers, 4th level, Student Union Building or telephone 819 2966 or 8553.

Tax Return Lodgement Adviser

Prior to the period when tax returns have to be completed for lodgement, the Union organises a Tax Accountant (who has a specialist knowledge regarding students), to give seminars free of cost to full and part-time students. Special one-to-one sessions are held at a small cost for those who need extra advice.

- Moroolbark campus
- Coordinator, Mooroolbark campus
  A. McGill, Dipf, BEd(VicColl), 761 9351
  Catering Supervisor
  L. Foster, 761 9350

Student Union facilities at the Mooroolbark campus include a contact desk which is staffed between 9.00am and 4.00pm, to provide students with an information outlet, educational assistance, advocacy, bookshop facilities, regular activities, access to print media through a weekly newspaper and membership and formation of educational clubs. The Student Union also offers a student meeting room and a student lounge with a pool table, access to CD player and reading material.

The Student Union also provides catering facilities which is situated in the Union Building adjacent to the Contact Centre. Here students and staff are tempted with the aroma of home made treats such as soup, hot take away food including vegetarian, sandwiches, salads, cakes, pastries, hot and cold drinks and confectionary all at very affordable prices. There is enough seating for 100 in the student dining area and another forty in the glass area. The staff dining area can accommodate fifty. The cafe is open 8.00am to 3.00pm, Monday to Friday.

- Prahran campus

The Student Union offices and student lounge are located on Level 2 of Building U. The first port of call for any student requiring Union services is the Contact Desk. From here students can book the Student Union meeting room (also located on this level), borrow one of the many magazines for leisure reading and find out information about the functions and activities of the Union. An Education Officer is employed at Prahran to look after the educational needs of Prahran students and follow up any concerns of students.

We provide two photocopiers for quality copying at the cheapest rates on campus. The student lounge is a comfortable and pleasant alternative to the other areas on the Prahran campus. Daily papers are available so students can keep up with life outside of the campus.

There are regular activities for students to participate in, either passively by turning up on the day, or more actively by helping to organise. These are held both during lunchtimes and in the evenings, to ensure all students have the opportunity to relax and mingle with each other. There are a number of clubs on the Prahran campus and the potential for more, if students are interested in being involved. The weekly publication of the Student Union, Swine, is distributed right across campus and Prahran students are welcome to participate.

For more information visit the Contact Desk at the top of the stairs off High Street, level 2 Building U or phone 522 6724 or 522 6729.

Sports Association

Executive Officer
A. Clarke, BAppSci(FIT), DipEd(Haw), GradDipBusAdmin(Swin)

Recreation Coordinator
D. Shanahan, BAppSci(FIT)

Fitness and Health Coordinator
H. Keogh, BAppSci(FIT)

Clubs Development Coordinator
A. Tingate, BARec(FIT)

Administration and Publicity Coordinator
K. O’Donnell, BAppSci(RMIT)

Campus Resource Officers
T. Jilbert, AssDipSportAdmin(Griff)
P. Kennedy
T. Rehak, BA(Lat), DipEd(Melb)

Swinburne Sports Association is an autonomous body that aims to promote and encourage opportunities in sport, health and physical recreation to all members of the Swinburne community. Every student automatically becomes a member of the Association on enrolment. Staff at Swinburne are also encouraged to join by paying a small annual fee.

The Association began in 1969. It is managed by students and has eight full-time employees across the three campuses.

Recreations

An extensive and exciting recreation program is offered continually throughout the year. Activities range in commitment and complexity. The easiest recreations are the free on-campus 'one hit wonders' such as face painting, life games, human fly, circus and the twelve storey 'BA' building staircase run. These 'everyone has-a-go' activities are designed to give you a break and a bit of fun in between classes.

If you have ever wanted to go ballooning, rafting, learn sailing, singing, photography or belly dancing then the recreation short courses may be your style also. The Sports Association offers over eighty such courses a year which run mostly in the evenings or weekends for one to two hours per week. Course costs are significantly subsidised by the Association making it possible to enrol in an activity which would normally be too dear.
Clubs
Some twenty different sporting and recreation clubs are affiliated and supported by the Sports Association. Clubs are managed by Swinburne students who volunteer to work in a committee format to plan and prepare activities for their club. Types of clubs are wide ranging and include the more team based and competitive sports such as badminton, Australian rules football, basketball, netball, tae kwon do, soccer and volleyball to the recreational based clubs such as hang-gliding, scuba, snowski, sky-diving, bush walking and waterski. The Sports Association's club structure emphasises a beginner-up approach so that members of any skill level can have a go, especially those who thought they wouldn't normally because they felt they may not have enough background or previous experience in that activity. Throughout 1993 the number of clubs continued to grow, especially at Eastern and Prahran where the club system began in that year. Such growth is indicative of the fun, challenge and enthusiasm obtained by joining a sports club.

Fitness and health
The Sports Association has as one of its objectives the provision of fitness and health promotion at each campus. The Hawthorn campus has a weight training, aerobics, nutrition counselling, massage and fitness testing areas in its Sports Centre. It is planned that aerobics and weight training will continue at the Eastern campus in the new Sports Centre planned for completion in late '93. Prahran campus will either have on-campus aerobics or a subsidised membership deal with fitness centres in the local vicinity to the campus.

By uniting with the Student Health unit and the Student Union the Sports Association creates on-campus awareness and promotion weeks such as Quit smoking, Heart Week, Health and Sexuality, and Women and Equal Opportunity.

Intercampus and elite sport
As a university, Swinburne submits teams into local, state and national events. The Sports Association's colours are green and gold and we support the individuals and teams that wish to participate for Swinburne. In this spirit, 'grudge' matches between the three Swinburne campuses develop a healthy rivalry that assists in the preparation and selection of our teams to compete against other universities in the Victoria/Tasmania conference. Our goal at these conference challenges is to be ranked in the top four so that we can progress to the national championships.

Students at Swinburne who are of world competition standard will be nominated and supported by the Sports Association for World Student Games events such as the Summer Universiade held in Buffalo in July last year.

Sports Association handbook and further information
By visiting the Sports Desk at your campus you can collect our handbook and detailed information on any of the clubs, recreations, facilities and services offered by us.

Opening hours and contact
Hawthorn
Monday-Friday 7.00am-11.00pm
Saturday-Sunday 11.00am-7.00pm
Sports Centre (Building 19)
Phone: 819 8018

Mooroolbark
Monday-Friday 9.00am-5.00pm
Room ME4
Phone: 728 7171

Prahran
Monday-Friday 9.00am-5.00pm
Room G107
Phone: 522 6745
Swinburne
Higher Education Division

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Composition of Academic Board

Members ex-officio
Chancellor
Vice-Chancellor
President, Student Union
Deans (4)
Head, School of Design
Head, Mooroolbark Campus

Elected Members
3 members of the academic staff of the Faculty of Applied Science elected by those staff.
3 members of the academic staff of the Faculty of Arts elected by those staff.
3 members of the academic staff of the Faculty of Business elected by those staff.
3 members of the academic staff of the Faculty of Engineering elected by those staff.
1 member of the academic staff of the School of Design elected by those staff.
10 members of the academic staff of the Higher Education Division elected by and from those staff.
6 members drawn from and elected by the general staff of the Higher Education Division, and the general staff of the Corporate Division.
6 members elected by and from the enrolled students of the Higher Education Division.

Total membership 44

Courses offered and abbreviated titles

The abbreviation for Swinburne University of Technology is SUT and should appear after a Swinburne award in brackets. For example: BBus(SUT). Awards received from Swinburne Institute of Technology (ie pre-1993) should have the abbreviation SIT placed after the award.

Undergraduate

Degrees
Courses leading to degree qualifications are offered in a wide range of fields, over fifty. The degrees and specialist areas in which Swinburne students may graduate are:

Bachelor of Applied Science BAppSc
Applied and Industrial Mathematics
Computer-aided Biochemistry
Computer-aided Chemistry
Computer Science and Software Engineering
Computer Science (conversion course)
Computing and Instrumentation
Environmental Health
Mathematics and Computer Science
Medical Biophysics and Instrumentation
Psychology and Psychophysiology

Bachelor of Applied Science (Honours) BAppSc(Hons)
Computer-aided Chemistry*
Computer-aided Biochemistry*
Computer Science
Environmental Health
Mathematics
Medical Biophysics
Medical Biophysics and Instrumentation
Scientific Instrumentation
* Subject to accreditation.

Bachelor of Arts BA
Asian Studies
Australian Studies
Cultural Studies
Economics
Italian
Japanese
Korean
Literature
Media Studies
Philosophy and Cultural Inquiry
Political Studies (can include Australian studies)
Psychology
Psychology and Psychophysiology
Sociology
Vietnamese

Bachelor of Arts (Honours) BA(Hons)
Cultural studies
Languages
Psychology
Social Science

Bachelor of Arts (Graphic Design) [BA(Graphic Design)]
Bachelor of Arts (Industrial Design) [BA(Industrial Design)]

Bachelor of Business BBus
Accounting
Business Law
Business Modelling
Computing
Economics
Finance
Marketing
Organisation Behaviour

Bachelor of Business (Honours) BBus(Hons)
Accounting
Business Law
Business Modelling
Economics
Information Technology
Marketing
Organisation Behaviour

Bachelor of Business/Bachelor of Arts BBusBA
Italian
Japanese
Korean
Vietnamese
Bachelor of Design BDes*
Graphic Design
Industrial Design

Bachelor of Design (Honours) [BDes(Hons)]*
* Subject to accreditation.

Bachelor of Engineering BEng*
Civil Engineering
Communication and Electronic
Computer Systems Engineering
Electrical Power and Control
Manufacturing (Production)
Manufacturing (Chemical)
Mechanical Engineering
* In certain circumstances this degree may be combined with the Graduate Diploma in Management.

Bachelor of Information Technology BInfTech

Bachelor of Technology BTech*
Aviation
Building Surveying
Fire Technology
Studies may be undertaken in various areas offered by the schools with the Faculty of Engineering.
* In certain circumstances this degree may be combined with the Graduate Diploma in Management.

Diplomas
Courses leading to diploma qualifications are available in the following area:

Diploma of Art DipArt
Graphic Design

Postgraduate

Graduate Certificates
Business Administration GradCertBusAdmin
Business Information GradCertBusInfTech
Technology
Computer Science GradCertAppSc
Enterprise Management GradCertEntMgt
Health Statistics GradCertAppSc
Social Statistics GradCertAppSc
Taxation and Finance GradCertTax&Fin
Training Management GradCertTrainMgt
Not all these courses will be offered for new students in 1994.

Graduate Diplomas
Air-conditioning GradDipConstr
Animation/Interactive GradDipCIM
Multimedia GradDipAppSc
Applied Colloid Science GradDipChemEng
Applied Philosophy*
Applied Psychology GradDipAppPhil
Asian Studies GradDipAppPsych
Biomedical Instrumentation GradDipAppStuds
Business Administration GradDipBusAdmin
Business Information Technology GradDipBusInfTech
Civil Engineering Construction GradDipCompSysEng
Computer Integrated Manufacture GradDipCorrFin
Computer Science GradDipEnt&Innov
Computer Systems Engineering GradDipJapanese
Corporate Finance GradDipJapanese(Prof)
Entrepreneurship and Innovation GradDipKorean
Equal Opportunity Administration GradDipKorean(Prof)
Health Statistics GradDipMaint
Industrial Chemistry GradDipMgt
Biochemistry GradDipMgSys
Japanese GradDipManTech
Japanese for Professionals GradDipMKTMod
Korean* GradDipOrgBeh
Korean for Professionals* GradDipPhil&CultIng
Management GradDipPhil&CultInf
Maintenance Engineering GradDipRiskMgt
Management Systems GradDipAppSc
Manufacturing Technology GradDipAppSc
Market Modelling GradDipAppSc
Organisation Behaviour GradDipAppSc
Philosophy and Cultural Inquiry*
Risk Management GradDipAppSc
Social Statistics Urban Research and Policy
Writing*
Not all these courses will be offered for new students in 1994.

Degree of Master

By coursework:
Master of Applied Philosophy* MAppPhil
Master of Applied Science MAppSc
Applied Colloid Science
Biomedical Instrumentation
Social Statistics
Master of Arts MA
Counselling Psychology
Japanese
Korean*
Urban Research and Policy
Master of Business MBus
Information Technology
Organisation Behaviour
Master of Business Administration MBA
Master of Communications* MComm
Master of Engineering MEng
Computer Integrated Manufacture
Information Technology
Master of Enterprise Innovation MEntInnov
Master of Information Technology
Master of Philosophy and Cultural Inquiry*
MPhil&CultIng
Master of Technology MTech
Computer Integrated Manufacture
Construction
Masters by thesis can be undertaken in all faculties. Enquiries should be made to the assistant registrar of the faculty concerned.

* Subject to accreditation
**Entrance requirements**

The general criterion for consideration for entry to a Swinburne course is Swinburne's assessment of an applicant's ability to complete a chosen course.

1. To satisfy the general entrance requirements and to be considered for admission to the first year of a degree or diploma course a student must have satisfactorily completed the VCE including the satisfactory completion of the work requirements in Units 3 and 4 of English.

Any person offered a place at Swinburne may be required to present for a fluency test in the English language. Applicants found to be below the necessary standard in this test may be required to undertake a remedial English course concurrently with their undergraduate course or may have their provisional offer of a place withdrawn.

For the Eastern Campus at Lilydale, preference may be given to applicants from the outer eastern metropolitan region of Melbourne.

2. In addition to meeting the general requirements above, applicants must also satisfy any prerequisite or special requirements specified by the faculty conducting the course and listed in the Swinburne Handbook.

3. Each faculty may specify criteria for special entry schemes, covering applicants who may not hold the necessary formal entry qualifications but who in the course selection officer's view have the motivation and potential to successfully complete the course concerned.

**Postgraduate**

Applicants for admission to postgraduate courses normally are expected to have completed a degree or diploma.

The specific requirements vary from course to course: some are open to those with any tertiary qualifications, others may require a qualification in a specific discipline or range of disciplines.

Provision is made for admission of applicants who have qualifications other than or less than the normal requirements outlined above but whose employment positions or experience indicates an ability to benefit from the course.

Requirements for specified courses are set out in the relevant faculty sections.

**Application procedure**

**Undergraduate**

**Full-time**

**First year**

Applications for entry to full-time study at the first year level must be made through the Victorian Tertiary Admissions Centre (VTAC), 40 Park Street, South Melbourne, 3205.

Applications must be made on the appropriate VTAC form:

- Form V

For students studying VCE in 1993. Copies of the form are made available through the schools and colleges concerned. Students should consult the VTAC publication, Guide to University and TAFE Courses.

- Form E

For all other applicants. Copies of the form, and the Guide to University and TAFE Courses in which it is enclosed, are obtainable from VTAC.

Special entry (alternative Category Entry) Applications for all courses, except full-time Engineering, must be made to VTAC. Application for full-time study in Engineering should be made to the Admissions Officer on a Swinburne application form.

**Second year and higher**

Applications for Art and Engineering should be made direct to Swinburne. Forms can be obtained from the Admissions Officer, 819 8386.

Closing dates for full-time places in second and higher years are:

- Art — Graphic Design 17 September 1993
- Engineering 14 January 1994

Applications for Arts, Business and Applied Science should be made to VTAC, 40 Park Street, South Melbourne, 3205.

**Part-time**

All applications for part-time courses in Engineering must be made direct to Swinburne. Forms are obtained from the Admissions Officer, 819 8386. Applications for admission to part-time courses in Arts and Business must be made through VTAC.

Closing dates for part-time places are:

- Arts 17 September 1993
- Business 17 September 1993
- Engineering 14 January 1994

These applications for part-time places should be forwarded to the Admissions Officer by the dates stipulated.

Part-time courses are not offered in the Faculty of Applied Science and the School of Design.

**Postgraduate**

All applications for enrolment in postgraduate courses other than Masters degree by research and by publication or PhD must be made to the Admissions Officer from whom application forms are available, 819 8386.

Applications for admission to postgraduate courses should be received by:

- **Applied Science**
  - Social Statistics 31 December 1993
  - All other courses 14 January 1994
Arts
All Graduate Diplomas and Higher Degrees 14 January 1994
except for
Graduate Diploma in Applied Psychology 22 November 1993
Master of Arts (Counselling Psychology) 22 November 1994

Business
All postgraduate courses 17 January 1994
except for
Graduate Diploma in Business Information Technology 17 December 1993

Engineering
All Courses 15 November 1993
All applications for enrolments in courses leading to the degree of Master by research or by publication should be directed to the Assistant Registrar of the appropriate Faculty.
Doctor of Philosophy applications should be addressed to the Office of Research and Graduate Studies.
Copies of the Statutes for the degree of Master by research and by publication and PhD are set out on pages 415-420.

Student Administration Office
The Student Administration Office provides information for students on admissions, enrolment and examinations regulations and procedures. Other functions include the processing, maintenance and storage of students’ academic records and personal details.
A more detailed description of the various enrolment and administration procedures is outlined below.

Location and office hours
Hawthorn campus
Enquiries 819 8088
The Student Administration Office is located in Room AD109, Administration Building (AD), John Street, opposite the Business and Arts Building (BA) and the Library. (See map inside back cover.)
Office hours are as follows:
During teaching weeks
8.30am — 6.30pm Monday to Thursday
8.30am — 5.00pm Friday
During non-teaching weeks
9.00am — 5.00pm Monday to Friday
Note: The Office is closed on public holidays.

Mooroolbark campus
Enquiries 728 7111
The Central Administration Office is located in Room MA1, Building A, Edinburgh Road, Lilydale.
Office hours are as follows:
9.00am — 5.00pm Monday to Friday
Note: The Office is closed on public holidays.

Prahran campus
Enquiries 522 6744
The Student Administration Office is located in Room F107, Building F, 142 High Street, Prahran (see map inside back cover).
Office hours are as follows:
9.00am-5.00pm Monday to Friday
Note: The Office is closed on public holidays.

Deferred entry
Students who are offered a place in a first year undergraduate program for 1994 may apply for a deferment until 1995. Applications must be addressed to the Registrar, and must be made at the time an offer is received.
Students who have been granted deferment will be informed in writing by the faculty concerned.

Higher Education Contribution Scheme (HECS)
The Higher Education Contribution Scheme (sometimes referred to as the graduate tax) came into effect on 1 January 1989.
Unless exempt from the provisions of the scheme all students enrolled in the Higher Education Division have to make a contribution to the cost of their studies. In 1993 the annual charge was $2,328.00 for a full-time student (or $1,164.00 for each full-time semester).
Part-time students pay a contribution in proportion to their full-time load.
Students have the option of:
(i) Making a contribution 'up front' in a lump sum (thereby attracting a 25% discount), or
(ii) Paying the contribution on a deferred basis through the taxation system, or
(iii) Making one partial payment 'up front' (minimum $100.00) and having the balance collected via the taxation system. Partial payments will not attract a discount. If permission is given to make more than one partial payment a handling fee may be charged.
Students have an opportunity each semester of changing their options.
Students exempt from the scheme include:
- those who have paid fees to Swinburne for a postgraduate course in accordance with Commonwealth guidelines;
- those enrolled in a non-award course;
- those fully sponsored under a foreign aid program;
- full-fee paying overseas students;
- students otherwise subject to Overseas Student Charge arrangements;
- holders of a HECS postgraduate scholarship.

All exempt students must lodge a Payment Options form by completing the exemption declaration section on the form. Proof of exemption will be required.
Further details about the Scheme are available from the Student Administration Office.
For refund information see page below.

HECS refunds
HECS refunds will be made to upfront payees where a student withdraws from the course on or before 31 March for semester one and 31 August for semester two. Students who require a refund must apply to the HECS Officer, Student Administration. A copy of the receipt must be provided.
Enrolment regulations

Definitions

In this section:

Enrolment includes 're-enrolment'.
Enrolment form includes 're-enrolment form'.

Subject means any area of study which is part of a course leading to an award and which has a title and code number in the subject register maintained by the Student Administration Section of the Registrar's Department; the singular includes the plural.

Awarding department means the department or, where courses are organised on a faculty basis (Applied Science, Arts and Business) the faculty responsible for the particular course; 'head of awarding department' has a similar meaning and includes the dean of the faculty where appropriate and the nominee of the head of the awarding department or dean.

Deferred entry means an intending first-year student defers enrolment for up to one year on receipt of an offer of a place.

Leave of absence means the suspension of enrolment during a course for a specified period at the discretion of the appropriate faculty board on the basis that the enrolment will be resumed at the end of the period.

Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.

Abandonment means discontinuation of enrolment without formal notification. Abandons has a similar meaning, unless the contrary intention is expressed.

Conditions of enrolment

Enrolment at Swinburne University of Technology is conditional upon:

- the information which is supplied by the applicant to the University upon which an offer of a place in a course is based, being accurate;
- the approval of the head of the awarding department (or his/her nominee) of the subjects concerned;
- the completion of the requisite enrolment and statistical information forms required by the University;
- the undertaking of the student to abide by the regulations procedures and standards of conduct of Swinburne University of Technology and to grant to the Registrar the authority to provide appropriate authorities who have permitted a particular student to enrol at the University, details of that person's academic progress as may be required as a condition of approval by that department or authority;
- the payment of the prescribed general service fee;
- the lodging of a Payment Options form in regard to the Higher Education Contribution Scheme (HECS) and, if appropriate, making an "up front" payment;
- the lodging of all documents required by the Registrar at the Cashier's Office or the Student Administration Office as appropriate to the procedure being followed.

Single subject enrolments

Under the conditions set out below, it is possible to study single subjects offered by the University without enrolling in a full degree or diploma course.

The minimum fee per semester for single subject (non-credit) enrolments in 1994 will be at the rate per weekly contact hour as set by the faculty, plus the appropriate General Service Fee.

The offering of places in single subjects is at the discretion of the faculty concerned and can be done only after full credit students have been accommodated. Thus offers may be as late as the first week of teaching.

An application form is available from the faculty concerned or the Admissions Officer.

Fees

General Service Fee*

All enrolling students are required to pay a general service fee. At the time of printing, fees for 1994 had not been determined. As a guide, the fees for 1993 were:

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>$176.00</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$84.00</td>
</tr>
<tr>
<td>Students studying in the</td>
<td>$96.00</td>
</tr>
<tr>
<td>cooperative mode</td>
<td></td>
</tr>
</tbody>
</table>

Note: All students enrolling at Swinburne for the first time will be required to pay an additional $20.00 towards the Student Union Capital Reserve Fund.

Some fee exemptions and concessions exist.

* The General Service Fee has two components:
(1) Student Union
(2) Sports Association

For all University purposes a part-time student is one enrolled for subjects which require a total class, tutorial and/or laboratory contact time of less than seventy-five per cent of the full-time course load.

Students studying under the industry based learning (cooperative) format are considered to be full-time students. They qualify for the special rate only in those years which include work experience. These are:

- Applied Science degree
- Art (Graphic Design) degree
- Civil, Electrical and Electronic, Manufacturing and Mechanical Engineering degrees

Late re-enrolment fees

Students who do not attend for enrolment (including any required review of second semester subjects) on the date and at the time specified by their faculty or awarding department, will be required to pay a late fee of $20.00 (where re-enrolment is completed before the commencement of the following semester's teaching); or $40.00 (where re-enrolment is completed after the commencement of teaching for the semester).

Additional fees

A part-time student who adds any subject to those for which he or she was enrolled and thereby increases the number of contact hours involved in his or her course to more than seventy-five per cent of the full-time course load, will be required to pay the difference between the part-time and the full-time general service fee.
Refund of fees

Later VTAC offer
A student who has enrolled as a result of an offer made through the Victorian Tertiary Admissions Centre (VTAC) and who receives a later offer from VTAC for a higher course preference, may receive a refund of all fees paid if notice of the withdrawal and application for the refund is lodged at the Faculty Office prior to 31 March 1994.

No later VTAC offer
A student who withdraws and does not receive a higher preference offer from VTAC may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal is lodged at the Faculty Office prior to 31 March 1994 for semester one and 31 August 1994 for semester two.

No refunds of fees will be made where a student withdraws from study after 31 March 1994 for semester one and 31 August 1994 for semester two.

Postgraduate fees refunds
Students should contact course authorities for details.

Confirmation of University records
The University recognises that error; can be made in the transcription of enrolment details from original copies of enrolment forms to the computer-held files. It is also realised that such errors can cause a great deal of inconvenience to students (and staff) if not detected.

Students are therefore asked to check the record of each semester's enrolment.

Students who do not check the statements, or who do not by the due date notify the Faculty Office of any errors existing in the records will be required to pay a substantial fee for each amendment to be made.

Amendments to enrolments

Withdrawing from subjects
A student may withdraw from a subject or unit without penalty of failure up to the dates shown below:

(a) for subjects concluding at the end of the first semester 31 March 1994 or
(b) for subjects concluding at the end of the second semester 31 August 1994.

A withdrawal made after the dates set out above will result in a fail being recorded on the student's academic record (the symbol NWD — failure because of late withdrawal — will appear).

A student who believes that the failing result NWD should not be recorded must obtain the specific approval of the dean of the faculty concerned, and the Registrar. Circumstances supporting the application must be set out on the Amendment to Enrolment form on which the approval for the withdrawal is sought. A late fee of $10.00 per subject may be imposed.

If, as a consequence of withdrawing from a subject or subjects, a student changes from full-time to part-time status, a refund of a portion of the general service fee will be made only if the withdrawal is made prior to 31 March 1994 for semester one, or for semester two, prior to 31 August 1994.

HECS liability

Students who withdraw from subjects or total enrolment after 31 March 1994 for subjects concluding at the end of the first semester or after 31 August 1994 for subjects concluding at the end of the second semester will still incur a HECS liability for that semester.

Students who withdraw from a full year subject after 31 March 1994 will still incur a HECS liability for semester 1. Students who withdraw from a full year subject after 31 August 1994 will incur a HECS liability for two semesters.

Adding subjects

No subject may be added to a student's enrolment without the approval of both the teaching and the awarding departments. Students should be aware that some faculties have restrictions on the period during which subjects can be added.

Notwithstanding any faculty rules, after 31 March 1994 (for subjects concluding at the end of the first semester) or 31 August 1994 (for subjects concluding at the end of the second semester) an amendment will be permitted only where special circumstances exist and the approval of the dean of the faculty concerned and the Registrar has been given. A fee of $10.00 per subject will be charged. Students not enrolled in a subject during examination period must seek approval of the faculty concerned. A fee of $50.00 per subject added will be charged.

Students should note that the addition of subjects may result in a change from part-time to full-time status. In such circumstances the amendment will only be recorded when an amount of money being the difference between the part-time and full-time general service fee paid has been paid. It is the responsibility of students to ensure that they are aware of any additional fees required and to arrange for their payment at the Cashier's Office.

Leave of absence

Students who have enrolled in a course and who wish to apply for a period of leave of absence may do so in writing addressed to the Assistant Registrar of the appropriate Faculty. The application should clearly indicate the circumstances on which the request is based and the length of time for which leave is sought.

Each application is considered within the faculty concerned under any specific faculty rules relating to leave of absence. Students who have been granted leave of absence will be notified in writing by the faculty concerned. Enrolment for all subjects for the duration of the leave will be cancelled.

Students who have been granted leave of absence will be eligible for a refund of their 1994 General Service Fee only if their application is received prior to 31 March 1994 for semester one or 31 August 1994 for semester two. Students must also attach copy of their enrolment receipt and ID card with their application. Refunds cannot be processed without a copy of the receipt and ID card.
Amendments to personal details

A student who changes his or her name, address or place of employment should complete an Amendment to Personal Details form which is available from the Student Administration Office and Faculty Office.

Students recording a change of name will be required to produce legal documentary evidence (e.g., marriage certificate, statutory declaration, deed poll certificate) in addition to completing an Amendment to Personal Details form.

Semester address for correspondence

Throughout the year information regarding HECS, examination results and other special notices are sent to students. Students must provide a correct address otherwise they may jeopardise their chances of meeting deadlines and observing other special requirements.

If a student changes an address an Amendment to Personal Details form must be completed and lodged immediately at the Faculty Office.

Identity cards

When on campus, all enrolled students are required to carry, and to produce on request of a member of staff, the photographic identity card issued to them.

The card, which has a maximum life of four years, must be presented for update/validation for the forthcoming year on re-enrolment.

The card includes the authorisation for borrowing from the Swinburne Library.

A student who loses an identity card should notify the library as soon as the loss is detected. Cardholders are, under library rules, responsible for any transaction made on the card up to the time of notification of the loss. A replacement card will be issued for a fee of $10.00. No refund of the general service fee will be made unless the identity card is returned to the Faculty Office with the notice of withdrawal from a course.

Academic statements

Statements

1. Students receive automatically the following records of their academic progress:
   (a) result certificates are posted to each student at the end of each semester;
   (b) a consolidated statement of all subjects so far attempted is printed on the student's re-enrolment form. (The student keeps a receipted copy of this form when re-enrolling.).

2. Other statements are available, on request, at the fees shown:
   (a) List of all results and a statement indicating completion of course if applicable. $15.00
   (b) A list of all results plus a list of those remaining to be passed for the completion of the course. $20.00

Reports

A detailed report of (final) examination $40.00
Access to examination scripts and marks for each question is available on request and without fee.
Enquiries regarding marks or access to scripts should be made directly to the appropriate department or faculty office.

Students nearing completion of their courses

Students nearing completion of their courses may obtain a statement indicating all results to date and those subjects required to complete their courses. Fee $20.00
Any student who has been involved in a change of syllabus and who has not previously obtained a statement, would be wise to do so before starting the final semester.

Awards (application to receive qualification)

Students eligible to be admitted to a degree or to be awarded a diploma, graduate diploma or certificate are required to apply for the award on the form prescribed. Forms are available from and must be lodged at the Student Administration Office, Administration Building.

Applications for all awards close on 31 May (for students completing their courses at the end of first semester) or 21 October (for students completing their courses in December), of the year in which the student anticipates completion of the academic work for the award.

Pathways: Articulation and Credit Transfer

The Pathways Program in place at Swinburne is designed to provide easy articulation between TAFE and Higher Education Division courses through defined credit transfer.

Credit transfer agreements have been completed with all faculties. Articulation is possible both from TAFE to Higher Education courses and from Higher Education to TAFE.

Detailed information on the extent of credit transfer and specific additional requirements which would attract maximum credit will be contained in the faculty brochures. In addition, a Credit Transfer Handbook for the whole University will be available from the Information Office, Student Administration Office and within departments.

TAFE students who have completed an Associate Diploma and wish to apply for credit transfer to an undergraduate degree. should submit the ‘Expression of Interest – Credit Transfer’ form at or before enrolment. This form is available from Student Administration Office.

Exemptions

For details on exemptions please see the entry in the appropriate faculty chapter.
Swinburne Centres

Centre for Animation/Interactive Multimedia (AIM)

National Centre for New Media Arts & Technologies (NCNMAT)

Director
John Bird, 819 8590

Administrative Officer
Robyn Blake, 819 8117

Lecturer in Charge
David Atkinson, 819 8963

Lecturer/Research
Jeremy Parker, 819 8963

Facsimile 819 8562

The two Centres have complimentary and overlapping roles and are staffed by: industry training, research and development, consultancy.

The National Centre was established in 1992 as a three year research and development project co-funded by the Victorian Education Foundation and Industry to provide a focus for research, development and professional production training in the ‘new media’ industries.

The Centre aims

The Centre aims to encourage the creative and innovative use of the motion picture medium and to foster producer, writer, director talent; to provide a “show-case” site for new talent, technologies, production methodologies and programs, with special emphasis upon the promotion of an interactive multi-media literate motion picture culture; to provide a resource, consultancy and advisory service to industry and education; to host and conduct short courses, seminars and professional training workshops and develop accredited training programs and standards for industry; to engage and enable collaborative research and development and joint-venture projects with industry and government; to provide production resources and teaching expertise to compliment the full-time postgraduate studies program and to foster Masters and Doctoral studies; to facilitate the creation, production, publication, exhibition and distribution of works which exemplify an artistic and innovative use of the medium; to aid the development of an indigenous Australian industry and workforce that is internationally competitive in respect of technology, skills and production standards.

Postgraduate studies

The Centre was established in 1992 and offers an accredited one year full-time Graduate Diploma in Animation and Interactive Multimedia. These specialist studies are a postgraduate evolution of Swinburne’s renowned Film and Television School (1966-91) and is staffed by foundation members of this school.

The objective of the course is to foster the development of artistic and creative talent through practical production. The course aims to train key creative talent: producers, writers and directors fluent in a range of motion-picture and interactive media types.

The course extends the artistic heritage and tradition of the motion picture arts into digital media and the new media and interactive multimedia domains (e.g. laser video disc, CD-ROM, CDI, CD-FM). The course aims to familiarise the students to the potentialities of digital media, interactivity, publishing, broadcasting and telecommunications.

Students are expected to demonstrate their competency as the initiator of program concepts in the role of writer/director and producer to a substantive body of published works for examination and exhibition.

The postgraduate diploma course is also intended to lay the foundation for persons wishing to undertake further advanced study at MA and PhD level.

Centre for Applied Colloid and BioColloid Science

Head
Professor D.E. Mainwaring

Department of Applied Chemistry, 819 8576

The Centre was established in 1980 for the development of applied research and contract research in applied colloid science. It provides an opportunity through research sponsorship and other collaboration for companies or organisations to make use of sophisticated equipment and applied research skills for the investigation of problems within this field. The base area of expertise in colloid science has been broadened to include some biochemistry. Major areas of applied research now include integrated projects combining diverse skills such as wastewater treatment (utilising adsorbing colloid flotation) for the removal of toxic heavy metals, anions and organics to biological techniques of cellular degradation for the complete treatment of toxic organics. Combined with more traditional areas of colloid science such as coal pelletisation and surface structure, these and other multidiscipline projects provide an avenue for the teaching of colloid science at an advanced (postgraduate) level and has resulted in the training of a large number of postgraduate students.

The Centre also promotes the teaching of colloid science at all levels — undergraduate and postgraduate, course-work and research only degrees. It also acts as a contact point for visiting members of staff from other academic institutions, companies or government authorities, both local and overseas. Visitors often give lectures and discuss research activities which proves advantageous to the quality of teaching at both undergraduate and postgraduate (particularly course-work postgraduate) levels as an integral part of their training.

Some of the work undertaken inevitably involves the development of equipment or processes which may be patented, covered under secrecy agreement or be available for publication in the international literature.

Centre for Applied Neurosciences

Director
Professor R.B. Silberstein

Department of Physics, 819 8273

The Centre for Applied Neurosciences was established in 1985.

Its primary purpose is to facilitate research into the relationship between human behavioural states and measured brain activity. The Centre also undertakes contract research in areas consistent with its primary purpose. The Centre has extensive collaborative research links with Australian and international research centres.
At this stage, the Centre is engaged in research into:
(a) mechanisms underlying brain rhythmic activity;
(b) modelling of brain electrical activity;
(c) relationship between cognitive processes and brain electrical activity;
(d) brain electrical activity and the learning process;
(e) brain electrical activity and schizophrenia;
(f) ageing and brain electrical activity;
(g) brain electrical activity and disorders of mood;
(h) monitoring of awareness and anaesthetic depth using brain electrical activity.

Other aims of the Centre include:
• to assist in the teaching of the neurosciences in undergraduate and postgraduate Swinburne programs
• to offer a facility enabling individuals to pursue postgraduate studies in the neurosciences
• to promote the availability and commercial development of intellectual property originating within the Centre.

Centre for Biomedical Instrumentation

Director
Doctor D. Murphy

Department of Physics, 819 8834
The Centre was established in 1989 to provide a focus for research and consulting activities related to instrumentation for medical and physiological use. The Centre draws on the strengths in instrumentation and biophysics within the Department of Physics.

At present, research activities include electrical impedance tomography, instrumentation for isometric muscle-strength assessment, instrumentation for electroencephalography, instrumentation for ambulatory monitoring, electromyography applied to muscle-fibre characterisation, effects of electromagnetic fields on tissue and a fibre-optic based respiratory monitor.

Other aims of the Centre include:
• to offer a facility enabling individuals to pursue postgraduate studies in biomedical instrumentation
• to offer short courses serving the needs of medical and health personnel and the biomedical instrumentation industry
• to assist in the teaching of biomedical instrumentation in undergraduate and postgraduate Swinburne programs
• to provide a contact point for visitors from other institutions or companies to undertake collaborative projects
• to promote the availability and commercial development of intellectual property originating within one centre.

Centre for Computer Integrated Manufacture (CIM Centre)

Director
Professor W. Thompson
Administration Officer
Mrs. E. Jones 819 8600 Fax 819 4949

School of Manufacturing and Mechanical Engineering, 819 84591872

Established in 1985 under the Key Centres of Teaching and Research Program funded by the Commonwealth Tertiary Education Commission, the Centre aims to provide a focus for teaching and research in computer integrated manufacturing (CIM).

Funding has been provided to establish a computer integrated manufacturing facility to be used for high level teaching and research at Swinburne; for industrial research and consulting and for training of academics from other institutions.

The Centre has a group of staff available to assist in industrial development projects in CIM and advanced manufacturing.

Industrial prototyping can also be done.

Centre for Computing Productivity Institute

Director
P. Kindler
Faculty of Business, 819 8883

The mission of the Computing Productivity Institute is to:
• provide a data base of information on available computing productivity methods and tools for use with the whole spectrum of computing systems
• provide a data base of information on the vendors and users of productivity tools, identifying opportunities for Australian software houses to distribute and/or build products where gaps exist
• provide and maintain an environment to evaluate and demonstrate productivity tools and techniques
• conduct ongoing research into use and misuse of these methods and tools
• provide on-campus and in-house courses to raise awareness and facilitate the correct use of the productivity methods and tools
• provide consulting in the selection, installation and use of productivity tools.

Design Centre

Manager
S. Huxley, 522 6909

This is a unit which provides equivalent industry based learning professional design practice for postgraduate students to qualify for a conversion to the award of Bachelor of Arts degree, working on professional commercial projects for industry and governments and selected non-commercial projects for community groups.

The Centre, which is fund generating, operates under the management of a lecturer who is assisted by other staff on a project needs basis.
Energy Systems Engineering Centre

Director
Professor J.H. Perry
School of Mechanical and Manufacturing Engineering, 819 8458

Established in 1982, the Centre aims to provide an advisory and consultation service to manufacturers, government departments and unions who intend to incorporate aspects of industrial democracy and employee participation.

Consulting, the writing of occasional papers, organising workshops and seminars, preparation of videotaped and printed training materials are all part of the Centre's work.

Centre for Housing and Planning

Director
Professor L.A. Kilmartin, 819 8146
Enquiries: 819 8825, 819 8837

The Centre was established in 1991 in order to undertake independent research and education in the fields of housing and planning. The objectives of the Centre are:

- to undertake research on housing and strategic planning issues with a view to improving the effectiveness and affordability of the public and private housing sectors and urban development;
- to develop a housing information system to improve decision making in the public and private housing sectors and to enable more effective policy development and marketing;
- to develop an export education program targeted at third world countries;
- to provide a mechanism to bring together public and private sector decision makers in order to allow information exchanges and debate in a 'neutral' setting;
- to develop a 'clearing house' for housing and strategic planning information research;
- to provide a focus for state and national co-operation and liaison around housing issues;
- to develop links with other higher education institutes;
- to evolve a co-ordinated approach to the provision of housing information and teaching.

Centre for Marketing Strategy

Director
L. Zimmerman
Department of Marketing and Organisation Behaviour, 819 8074

The establishment of the Marketing Strategy Centre has been a major initiative of the Faculty of Business. The Centre will provide a focal point between the business and government sectors and the marketing discipline at Swinburne.

Centre for Industrial Democracy

Chair
J. Morison
Department of Social and Political Studies, 819 8540

The Centre was established in 1982 to provide an advisory and referral service to manufacturers, government departments and unions who intend to incorporate aspects of industrial democracy and employee participation.

Consulting, the writing of occasional papers, organising workshops and seminars, preparation of videotaped and printed training materials are all part of the Centre's work.

Laboratory for Concurrent Computing Systems

(Mooroolbark campus)

Director
Professor G.K. Egan
Executive Officer
RT. Dame, 728 7167
Professional staff
M. de Bruyn, 728 7164
J. Simmons, 728 7165
A. Sekerogliou, 728 7168
S. Zeng, 728 7168

School of Electrical Engineering, 728 7170

The laboratory for Concurrent Computing Systems was established in 1990 to foster research into concurrent computing systems, including supercomputers, and their applications.

The laboratory's charter is to:

- maintain high quality research into computational models and architectures applicable to parallel and supercomputing systems, and through this research maintain strong links with other major international research groups;
- establish, maintain and contribute to a directory of parallel programming tools and algorithms;
- identify applications which would benefit from the results of its research and the research of others, with particular emphasis on applications of national or commercial importance;
- develop selected applications which are within the capacity of the laboratory, and where appropriate seek partners for their further development and transfer to industry or government bodies;
- provide educational programs for industry and government; and
- provide a direct consulting service to industry and government on specific applications or issues.

The laboratory has a major collaborative link with Cray Research Australia. The objectives are to explore and promote innovation through high performance computing in Australian business and industry. The collaboration also seeks to demonstrate how numerically intensive computing can bring a dramatic improvement in 'time to market' for product development and hence significantly improve competitiveness and to provide appropriate training programs for industry.

The Laboratory has also collaborative links with other major research groups including Lawrence Livermore Laboratories, the Massachusetts Institute of Technology, the Australian Bureau of Meteorology Research Centre and the CSIRO.
The Centre aims to help Australian business and industry in their decision-making concerning domestic as well as international business. It offers a range of consultancy services including marketing research, strategic research, management development and customer focus workshops. Through its activities the Centre will facilitate the introduction and implementation of cooperative education.

The Centre will continue to present the already well-patronised portfolio of short courses in marketing, services marketing and strategic management.

Media and Telecommunications Centre

The Media and Telecommunications Centre, established in 1988, is based in the media studies subject area in the Faculty of Arts. Its role is to initiate educational programs that will foster closer cooperative connections with industry and the wider community. The activities it has undertaken include:

- in 1989, the establishment of the Commercial Radio Course to provide training for those planning a career in commercial radio
- in conjunction with media studies course work in the Bachelor of Arts program, the production of Swinburne publications and publication of local community newsletters
- the presentation of short courses on a variety of media-related subjects (such as media regulation, techniques of radio production, media in the classroom, media awareness) and desktop publishing skills
- a publishing program of dossiers and monographs on film, television and general media subjects
- research consultancies on telecommunications and media in the Pacific, Asia and Australia.

National Korean Studies Centre

Executive Director
Adrian Buzo, 819 8608

The National Korean Studies Centre was established with Commonwealth Government funding in 1990 as a joint venture of Swinburne University, La Trobe University, Monash University and the University of Melbourne. The mission of the centre is:

- to develop and expand teaching, research and associated activities in Korean Studies, including language, culture, politics, law, business, education and other relevant disciplines
- to enhance the Australian community's knowledge and understanding of Korea
- to support Australia's economic and other national development strategies

Building on existing teaching programs conducted in consortium member institutions, the Centre:

- fosters the design and delivery of vocationally and culturally relevant Korean Studies courses in all sectors of the Australian education system
- fosters and undertakes high quality comparative regional research relevant to Korean Studies and to Australia-Korea relations
- promotes greater awareness and mutual awareness of all aspects of the Australia-Korea business and trade relationship
- promotes greater awareness of Australia in Korea.

Centre for Psychological Services

Manager
R.H. Cook

Department of Psychology, 819 8105 or 819 8653

The Centre for Psychological Services provides several major services to the wider community. These include personal counselling, psychotherapeutic programs, educational and training services and research consultancy, all of which are offered on a fee for service basis.

The Centre is staffed by experienced psychologists associated with the Psychology Department, and enhances the teaching resources of the Department by providing a facility for the professional training and education of graduate students.

Initially the Centre has developed special services in:

- marriage and relationship counselling
- family therapy
- infertility counselling
- lifestyle management
- treatment of anxiety
- management of children and adolescents.

The Centre accepts referrals from a wide range of other professionals and from both private and government sponsored agencies.

It is located at 16 Park St, Hawthorn.

Science Education Centre

Chair
Professor J.G. McLean, Dean

Coordinator
Peter Lees, 819 8503

Faculty of Applied Science

The Science Education Centre operates as part of the Faculty of Applied Science to promote interest in science and technology. The major activities of the Science Education Centre are:

- operation of the Swinburne Travelling Science Show — a science stimulus program which visits primary and secondary schools throughout Victoria. A separate program for the wider community and professional events is also available
- provision of support for the Swinburne Travelling Science Show to teachers in the form of technical information, seminars and in-service training.

Taxation Research and Advisory Centre

Director
Denis Vinen

Department of Accounting, 819 8474

The Taxation Research and Advisory Centre was formed firstly, in response to the community's need for easy access to advice on a progressively complex and difficult area and secondly, the University's growing awareness that its valuable resources should be made more readily available to the community.

Services offered

- research for tax planning
- computer programs for problem solving, simulation studies and cash flow analysis

The Taxation Research and Advisory Centre is located at 16 Park St, Hawthorn.
- research for contesting tax assessments
- advice on interpreting income tax legislation and tax rulings
- assistance in compliance with income taxation department administrative requirements
- research for preparing academic papers
- library searches.

**Facilities**
- extensive computer hardware and software
- excellent library including 500 volumes on taxation, video and audio tapes and facilities for computerised literature searches
- experienced and qualified staff with legal, accounting, economic and computing backgrounds.

**Using the Centre**
The Centre runs on a fee for service basis and as a matter of policy wishes its resources to be used extensively by the community. The range of services offered should appeal to:
- small and large businesses with specific problems
- accountants or lawyers who wish to offer their clients an extended service
- entrepreneurs
- investors
- salary earners
- retirees.

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**Centre for Urban and Social Research**

[Chair]
J. Pidgeon

[Enquiries]
Anne Tucker, 819 8825
Department of Information Systems, 819 8306

The Centre was established in 1976 as a vehicle to bring together Swinburne staff with a common interest in urban issues. The original objective of the Centre was to run seminars and workshops for the general community. From the early 1980s, the focus has been on applied and pure research, with a particular emphasis on housing research. In the 1990s, these activities have been sustained and expanded but have been complemented by initiatives in public sector training and education including the production of workplace training modules.

The Centre emphasises the demographic, social and economic dimensions of urban research, education and training and policy development. As a result of the accumulated experience of staff, a wide range of skills and techniques is offered by the Centre including survey research, needs analysis, social impact analysis, housing market analysis, community profiles, population forecasting and projections, development of training modules and multimedia teaching programs, and policy evaluation.

**Research themes of the Centre**
- Housing and urban issues, particularly the affordability of housing, infrastructure provision and housing finance have taken a new immediacy in the last two years reflecting a renewed concern at all levels of government with these issues. The Centre has close contact with senior officials, and politicians at all levels of government.
- The Centre reinforces the University's research priorities in terms of an applied focus, close links with industry, and the integration of socio-economic analyses with the technological. There is no equivalent urban and social research centre in any university in Victoria, and few in Australia, with similar objectives, competence or size.
- The Centre is particularly concerned in translating its considerable research knowledge into training and educative materials for a wider audience hence the emphasis on development of training modules.

**Community relationships**
Members of the Centre are involved in numerous external committees and panels including Ministerial Advisory Committees and Commonwealth Committees of Inquiry. Some of these committees and other positions are:
- Victorian Ministerial Advisory Committee on Homelessness and Housing
- Commonwealth Committee of Inquiry into Local Government Approval Processes
- Victorian Women's Consultative Committee
- Melbourne City Council Equal Opportunity Consultative Committee
- Inner East Regional Housing Council
- Western Region Housing Council
- Design for Living Award Management Committee
- Council Australian Consortium for Social and Political Research
- Victorian Health Promotions Foundation
- Royal Australian Planning Institute
- Technical Expert on Strategic Planning for the Metropolis Association
- Secondment to the Uruguay Government on Planning and Housing
- Commonwealth Urban Form Committee.

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**Centre for Women's Studies**

[Chair]
T. Castleman

[Faculty of Arts, 819 8466]

The Centre for Women's Studies is composed of members drawn from all divisions of Swinburne who have a wide range of expertise relevant to gender and the status of women.

The activities of the Centre include:
- presenting short courses on topics which concern women and gender issues (e.g., feminist theory, equal opportunity Implementation, women and education) Such courses are open to the general public
- carrying out research projects which investigate aspects of the status of women and social policy relevant to the special needs of women
- compiling educational materials relating to women's studies for use in teaching courses on sex and gender as well as for inclusion in existing courses
- preparation of occasional papers.
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Research Associate
M.A.M. Boers, MSc(Utrecht), PhD(Maryland)

Department of Physics

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P.D. Ciszewski, BAppSc(SIT)
T.G. Edwards, BSc, PhD(Lond), FRSC
D. Lamble, BSc(Hons)(LaT), DipEd(Melb)
M. Schier, MSc(Mon)

Swinburne Centres Associated with Faculty of Applied Science

Centre for Applied Colloid/Biocolloid Science
Centre for Applied Neurosciences
Centre for Biomedical Instrumentation
Centre for Systems Methodologies
National Scientific Instrument Training Centre
Science Education Centre
National Centre for Women: Employment, Education and Training

Courses offered

Bachelor of Applied Science

**Bachelor of Applied Science (Honours)**

* 2077 Computer-aided Biochemistry
* 2065 Computer Science
* 2069 Environmental Health
* 2071 Mathematics
* 2066 Medical Biophysics
* 2068 Medical Biophysics and Instrumentation
* 2067 Scientific Instrumentation

**** Subject to accreditation. No copy exists in this Handbook. Details available from the Department of Applied Chemistry or the Faculty Office.

Graduate Certificate in Applied Science

2077 Computer Science
2076 Social Statistics

Graduate Diploma in Applied Science

ZO81 Applied Colloid Science
2084 Biomedical Instrumentation
2088 Computer Science
2085 Industrial Chemistry
2086 Social Statistics

Masters of Applied Science

2090 By research
2091 Applied Colloid Science — by coursework
ZO93 Biomedical Instrumentation — by coursework
ZO96 Social Statistics — by coursework

1090 Master of Information Technology
ZO01 Doctor of Philosophy

General Faculty Information

Hawthorn and Mooroolbark campus courses

Courses are offered at the Hawthorn and the Mooroolbark campuses. Currently, at the Mooroolbark campus only the Bachelor of Applied Science degree program, in Mathematics and Computer Science is offered but other programs will be available at a later stage.

Honours Year

For information regarding honours year studies please contact the Faculty Office or see the appropriate entry in this Handbook.
Application procedure

Application for admission to undergraduate or postgraduate courses in 1994, at Hawthorn or Mooroolbark campus, should be made on the appropriate form, obtained and lodged as follows:

Course: Undergraduate
- Bachelor of Applied Science
- Bachelor of Applied Science (Honours)

Undergraduate

Postgraduate
- Special entry*
- Graduate Certificate Applied Science
- Graduate Diploma Applied Science
- Masters by Coursework
- Masters by research and Doctor of Philosophy

Mentor scheme

Each first-year undergraduate student is allocated to a particular member of staff who is known as the student's mentor. These mentors are responsible for guidance on student difficulties, courses, exemptions and re-enrolments.

Admission with advanced standing

Certain subjects passed at another institute, or at a university may provide advanced standing in the above courses. All applications for subject exemptions should be submitted to the Assistant Registrar on the appropriate form at the time of initial enrolment in the course. Each application is considered by the appropriate departments in consultation with the Applied Science Faculty Board. Exemptions are granted by the Faculty Board and applicants are informed by letter of the Board's decisions. Until this letter is received, applicants should not assume the approval of any application for exemption.

Laboratory material requirements

Students studying chemistry are expected to provide laboratory coats, safety spectacles, practical notebooks, and minor equipment such as spatulas.

Laboratory and practical work requirements

In all appropriate subjects a student must perform satisfactorily in practical or laboratory work in order to gain a pass. Each enrolled student must either complete adequately the laboratory work relevant to the current year, or obtain recognition for work previously completed at Swinburne or elsewhere. Students seeking such recognition should consult the lecturer in charge of the subject.

Assessment of student performance regulations

Assessment of student performance is carried out in accordance with the Assessment Regulations set out in the 'Procedures and Regulations' chapter of the Handbook. In addition, the Faculty of Applied Science operates, under the following assessment regulations, a scheme of passing by years.

Selection is based on the relevance of the applicants' employment and on their educational background, particularly in the appropriate prerequisite subjects. Applicants under the special entry scheme should include in their applications a complete record of their educational background from their final secondary year. They should also include a statement of their work experience.

Normally the number of special entry scheme admissions will not exceed 10% of any new intake in any year.

Admission with advanced standing

Certain subjects passed at another institute, or at a university may provide advanced standing in the above courses. All applications for subject exemptions should be submitted to the Assistant Registrar on the appropriate form at the time of initial enrolment in the course. Each application is considered by the appropriate departments in consultation with the Applied Science Faculty Board. Exemptions are granted by the Faculty Board and applicants are informed by letter of the Board's decisions. Until this letter is received, applicants should not assume the approval of any application for exemption.

Laboratory material requirements

Students studying chemistry are expected to provide laboratory coats, safety spectacles, practical notebooks, and minor equipment such as spatulas.

Other laboratory equipment and a locker are provided for student use on payment of a deposit. Lockers are allocated by the Chemistry Laboratory Manager to whom application for a locker must be made at the time of enrolment.

Re-enrolment

Re-enrolling students who require advice about their courses should consult their mentors. If an old syllabus is being followed, changes may be necessary either to complete the old syllabus or to effect the change to a new syllabus. Students who are in doubt about their courses should consult their mentors before attempting to re-enrol.

Assessment of student performance regulations

Assessment of student performance is carried out in accordance with the Assessment Regulations set out in the 'Procedures and Regulations' chapter of the Handbook. In addition, the Faculty of Applied Science operates, under the following assessment regulations, a scheme of passing by years.

The Applied Science Faculty Board is considering a revised passing scheme for 1994. Details of any changes made will be distributed to all students at enrolment and re-enrolment. Student performance is assessed by various methods, e.g., formal examinations, tests held during the semester, project work, assignments and laboratory reports. A statement of the workload requirements and the assessment program for each subject is given to all students early in each semester.

Attendance

It is expected that students will attend all lectures, classes, demonstrations, tutorials and practical sessions. In addition, satisfactory performance in carrying out the tasks and prescribed work in all subjects is required. Failure to comply with these requirements may lead to disqualification or presenting at examinations. Students so disqualified will usually be notified in writing by the Faculty of Applied Science, but the Faculty is not bound to give such notification.

Interruption to studies

Students prevented by illness or other serious cause from satisfying attendance requirements for one week or more should report their absences in writing to the Assistant Registrar. Staff associated with the relevant subjects will be advised so that consideration may be granted by the Faculty if necessary.
Special examinations
In addition to information in this Handbook, students are advised that unless all assessment requirements during the semester have been complied with, approval for special examinations will normally not be granted.

Assessment Regulations

1. Student performance
   1.1 Unsatisfactory performance
   A student whose performance is unsatisfactory will be required to repeat the failed subject(s) at the earliest opportunity. If a student has completed the necessary prerequisite subject(s), they may also be permitted to enrol in additional subjects from the next stage of the course. This additional enrolment is conditional upon the timetable allowing attendance at all classes and no enrolment will be permitted in classes which overlap. If there is any change in the timetable which results in overlapping classes, it will be the responsibility of the student to notify the Faculty office of the overlap and make the appropriate amendment to their enrolment. The existence of overlapping classes will not be accepted as an excuse for unsatisfactory performance.

   1.2 Supplementary Program
   The Faculty of Applied Science will operate a limited learning and assessment Supplementary Program, designed to assist students to achieve the standards expected in their courses. It will be conducted during inter-semester breaks, usually during December to February. The supplementary program may embrace all undergraduate subjects taught by the Faculty of Applied Science. Entry to the program will be limited and will depend on overall performance and will not be automatically available.

   Eligibility
   All enrolments in the Supplementary Program will be at the discretion of the Faculty Courses Committee, which will take the advice of the department responsible for the subject.

   The following conditions will normally apply:
   1. The student must have achieved a result of not less than 40% in a subject before consideration for a Supplementary Program.
   2. The overall performance of a student will be taken into account before any Supplementary Program is granted.
   3. A Supplementary Program in laboratory components will not be available and therefore the student must have satisfied the practical laboratory requirements for any subject for which enrolment in the Supplementary Program is being considered.
   4. Subjects offered by other faculties will be bound by the rules of the teaching faculty.

   It is the responsibility of the student to ensure they enrol and complete the requirements of the supplementary assessment.

   1.3 Exclusion
   If in any semester a student fails all subjects or fails any subject(s) being repeated, then that student will be excluded from further study in the Faculty.

   In addition, a student who passes only one or two subjects may be excluded.

   Excluded students will be permitted to appeal to the Courses Committee. The appeal must be in writing and students may be required to appear before the Courses Committee. At least five working days notice will be given of the closing date for submissions to reach the Assistant Registrar.

   If the student makes no appeal to the Committee by the due date or if the Committee after considering an appeal does not rescind the exclusion, the student will not be permitted to undertake further study in the Faculty without making formal application for readmission and no application will be considered until a period of two years has elapsed.

   2. Assessment Irregularity
   Cheating and plagiarism, that is the action or practice of taking and using one's own, the thoughts, writings or other work of someone else with the intent to deceive, constitutes an irregularity as described under Examination Description of the Swinburne Assessment Regulations. Such an action is a major infringement of the Institute's academic values. It is essential that students understand that plagiarism or cheating shall be considered to have occurred if:

   • a computer program substantially written by someone else (either another student, a previous student or the author of a publication) is presented as the student's own work;
   • paragraphs, and even sentences in essays which are written by someone else are not enclosed in quotation marks. and accompanied by full reference to source;
   • work of someone else is paraphrased, and is not appropriately attributed and referenced;
   • laboratory results of someone else are used without appropriate attribution;
   • laboratory results are altered with the intent to deceive.

   3. Interpretation
   Nothing in these regulations shall be interpreted as contravening the Assessment Regulations of the Academic Board.

   Cooperative learning
   (industry based learning)

   In the Applied Science Faculty, the Bachelor of Applied Science courses are undertaken as programs of industry based learning (IBL).

   Undergraduate courses offered as four year programs in the Faculty of Applied Science are run in the IBL format and include three years of academic study plus one year of paid industry based learning. The IBL is an integral part of the academic program and makes up part of the final assessment.

   In these programs students learn in both academic and work settings, and these two phases of learning are related to one another in a planned manner. Swinburne, the employer and the student collaborate to provide a complete professional education.

   Students benefit educationally as they are provided with practical experience in solving real problems under authentic conditions using the theoretical concepts learned in the classroom. They are given an appreciation of the structure and purpose of the various organisations concerned, enabling them to make more realistic decisions regarding the area of the profession in which they wish to become involved. Two main models exist. Under the 'traditional' model which has operated at Swinburne since 1963, students are paid a salary during their period in industry. A new model, operating since 1988, utilises scholarships. Under this model, students are not paid any salary during their periods of industry based learning.
Employers of students benefit by obtaining a reliable and continuing source of personnel and by establishing a direct liaison with Swinburne. Contact with students assists employers in choosing the best graduates and reducing the cost of recruiting and training new professional staff.

The students are visited regularly by academic staff during their industrial semesters. Some students have the opportunity to obtain work experience overseas. In such cases, academic staff from local educational institutions visit the students at their places of work. Programs of exchange with the following institutions have been of particular value to students:

- University of Surrey, England
- University of Victoria, Canada
- Drexel University, USA
- Northeastern University, USA
- FachHochschule fur Technik, Mannheim, Germany

Students without permanent resident status should be aware that industry based learning is not available for certain courses. In the other courses, it is subject to the availability of industrial places and the achievement of a suitable level of English language skills by the student.

While the Faculty will assist students in finding an industrial placement, it is frequently impossible to find local employment for students without permanent resident status because priority is given to Australian citizens and permanent residents.

Students without permanent resident status are advised to seek placement in their home country. The Faculty will provide information on academic institutions capable of providing supervision of industrial placement in the home country.

Prizes and Scholarships

**Eric Bode Prize**

A bronze plaque and a cash prize donated by Dr E.H. Bode, are awarded by the Applied Science Faculty Board to the best student in the final year of the degree courses in applied science.

**Miles Hancock Prize**

Awarded in the area of postgraduate colloid science. Awarded on an occasional basis by the Colloid Department to an outstanding student. The value of the prize is between $500-$1,000.

**Mooroolbark campus**

Eight first year scholarships will be awarded to Bachelor of Applied Science Mathematics and Computer Science students in 1994.

**T.G.O. Jordan Memorial Prize**

Awarded by the Australian Institute of Environmental Health (Victorian Division) to the environmental health student with the highest overall result in the final year of the course. The annual prize is usually books or an attache case to the value of $120.

**Undergraduate Scholarships**

Three or four scholarships available upon application from students completing first year of the chemistry or biochemistry courses. The scholarship value is $9,000 per annum for three years.

**Department of Computer Science**

Postgraduate research scholarships for Master of Applied Science or Doctor of Philosophy are available under the following two schemes: Entry qualifications of at least an honours degree or equivalent are required.

**Fee Exemption Scholarship**

Scholarships covering tuition fees only are available to students who are not Australian permanent residents. These scholarships are awarded for one year in the first instance and may be extended. Additional income from tutorial duties may be available for students with appropriate skills.

**Departmental Scholarship**

This scheme provides a stipend of $10,000 pa. In addition, a teaching assistantship may be negotiated up to an additional $5,100 pa. The successful candidate may hold the scholarship for up to two years for a Masters program or three years for a PhD program. Renewal of the teaching assistantship shall be subject to adequate performance of teaching duties.

Four prizes are currently available to Computer Science students:

**Aspect Computing Prize**

Amount of $1,000 awarded to a student in the final year of a computing degree course (not BIT) on the basis of results in second year computing units. The student should have completed IBL if they are undertaking a degree which has an IBL component. The department nominates up to three students. Aspect Computing interviews these students and then awards the prize. (Note: Bachelor of Business (Computing) students also compete for this prize.)

**Australian Computer Society Prize**

Amount of $150 awarded to the 'best' student on a degree accredited by the ACS at level one or two. Students are evaluated on the basis of their aggregate performance on final year computing units.

Currently, three prizes are awarded for degrees/diplomas offered by the department: Computing and Instrumentation, Mathematics and Computer Science, and the Graduate Diploma in Applied Science (Computer Science). It is expected that a prize will also be awarded for the Bachelor of Information Technology degree and in the Bachelor of Applied Science (Computer Science and Software Engineering) from 1993 on.

The department nominates the best student in each degree/ diploma.

**Ada Association Prize**

Amount of $200 awarded to the student on the BAppSc(Computer Science) who achieves the highest marks in unit SQ400 Concurrent Programming. This was awarded for the first time in 1992. The department nominates the best student.

**Software Practice 1 Competition Prize**

Amount of $100. All students in unit SQ103 Software Practice 1 are invited to participate in a programming contest in semester two. Students work in teams (generally of two people) at developing a solution to a programming problem. The winning team is that whose program performs optimally according to predetermined criterion. Entries are sought as part of the SQ103 program in second semester.

**Department of Mathematics**

**Graduate Research Scholarship**

Amount of $15,500 awarded based on academic achievement consisting of a good honours degree and work experience.

The ASOR Medal (Australian Society of Operations Research)

Awarded to the best final year Operations Research student at the University, by the Operations Research Society of
Australia on recommendation of the Mathematics Department teaching panel. There is no monetary value involved; instead, the successful student is required to present a paper at the annual ASOR (Melbourne Chapter) student conference.

Department of Physics
Physics Department Postgraduate Scholarship
At least one twelve-month scholarship is normally provided for students undertaking full-time postgraduate research in an area of study relevant to the Department. The value of the scholarship is determined by the Head of Department. Scholarships may also be made available to international students engaged in full-time postgraduate research in an area of study relevant to the Department.

Swinburne Centre for Applied Neurosciences Postgraduate Scholarship
One scholarship is normally provided to a student undertaking full-time postgraduate research in an area of study relevant to the Centre. The value and duration of the scholarship is determined by the Director of the Centre.

Undergraduate course information

Student workload, credit points
The Faculty of Applied Science operates a student workload model based on a credit point system. In this model, the standard workload for a full-time student undertaking a program of study for one year comprises subjects with a total value of 100 credit points. To complete, for example, a full-time three-year bachelor degree program, a student must pass subjects to the value of at least 300 credit points.
The credit point value of a subject is a notional measure of the relative workload associated with that subject. Normally, a full-time student enrols in subjects totalling 50 credit points per semester, however, small variations in this total are permitted according to the choice and availability of elective subjects.

Credit for Swinburne TAFE Division associate diplomas
Associate Diploma of Applied Science in Laboratory Technology
Students who complete this associate diploma at an acceptable level and with an appropriate choice of electives are eligible for direct entry into the second year of the Bachelor of Applied Science degree programs in computer-aided chemistry or computer-aided biochemistry. The amount of credit granted in each case exceeds 100 credit points.
Applications should be made through VTAC:
Associate Diploma of Applied Science in Computing and Applied Physics
Students who complete this associate diploma at an acceptable level and with an appropriate choice of electives are eligible for direct entry into the second year of the Bachelor of Applied Science degree programs in computing and instrumentation; computer science and software engineering; and mathematics and computer science. In each case the amount of credit granted is 100 credit points.
Applications should be made through VTAC.

Credit for TAFE associate diplomas in computer science
Students who have completed an appropriate TAFE associate diploma at an acceptable level can earn one year of credit (100 credit points) towards a three-year degree program in computer science. A special two year full-time degree conversion program is available to such students. The associate diploma may be in business, science, or engineering, but must include acceptable introductory courses in computer systems and computer programming.
Applicants will also be expected to have passed mathematics subjects to at least the equivalent of the VCE level required for normal entry into the first year of computer science degree programs in the Faculty of Applied Science.
Applications should be made through VTAC.

Subject length
Unless otherwise stated all subjects are semester subjects.

Bachelor of Applied Science
To qualify for a degree, a student must complete successfully one of the following courses:
Applied and Industrial Mathematics;
Computer-aided Biochemistry;
Computer-aided Chemistry;
Computer Science (conversion course);
Computer Science and Software Engineering;
Computing and Instrumentation;
Environmental Health;
Mathematics and Computer Science;
Medical Biophysics and Instrumentation;
Psychology and Psychophysiology*.

The structures of courses are described below in the above order (alphabetical). Courses combining the single major computer-aided chemistry with instrumentation, computing or mathematics are also offered on an individual basis, subject in each case to the approval of the Faculty Board.
* A co-major is offered by the Faculty of Applied Science and Faculty of Arts.
As some courses may have minor changes made in 1994 some alterations may be made to subject codes and contact hours.
Up to date listings of subjects and hours will be made available to students on enrolment and re-enrolment.

Z070 Applied and Industrial Mathematics
VTAC Course Code — SHMC (Hawthorn campus)
Students will initially enrol in SHMC (Z059) and will transfer to SHMC (Z070) at the end of first year.
Through this course students will develop their understanding of mathematical principles, their application to real problems and to computer based solutions. Particular emphases are on the process of creating an appropriate mathematical model, the techniques of solution of the model and the interpretation of the model. Through this process, students will gain an appreciation of the applicability and limitations of a model.

Industry based learning
The optional four-year program is taken in industry based learning format which includes one year of paid work experience.
Operations research
Operations research is the scientific study of problems arising in commerce and industry. Students examine loosely structured practical problems at an early stage in the program and later work in groups to undertake real projects for external clients. Computer methods are used extensively in both classes and group work.

Applied statistics
Applied statistics is concerned with the collection and analysis of data. Students will study statistical methods for sampling, for making inferences from samples and for modelling data using methods such as regression. Studies in applied statistics will equip students with the ability to plan statistical investigations and to analyse data using specialist statistical computer packages.

Computational mathematics (not available in 1994)
Computational mathematics will focus on the application of applied mathematical techniques to the solution of industrial problems. Applications include mining and materials processing, pollution, management of resources and the physical and chemical processes of the engineering and manufacturing industries. They cover a wide range of problems in the natural and life sciences, as well as the rural and urban environments.

Career potential
With the advances in computer technology over the last twenty-five years, the application of mathematical and statistical techniques has spread significantly in industry and business. There is an increasing need for practitioners who can apply and interpret the outcomes of mathematical and statistical models to describe current situations and to investigate proposed changes.

Prerequisites (entrance 1994)
Units 1 and 2: four units of mathematics. Units 3 and 4: two units of Mathematics chosen from Space and Number, Reasoning and Data, Change and Approximation and Extensions (Change and Approximation). Applicants who do not satisfy the above requirements may be considered on the basis of factors such as employment, educational background and in some cases, an interview.

Course structure
Full-time course
(1993 syllabus)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM131</td>
<td>Communication Skills</td>
<td>7.5</td>
</tr>
<tr>
<td>SM180</td>
<td>Mathematics 1</td>
<td>12.5</td>
</tr>
<tr>
<td>SM184</td>
<td>Data Analysis and Probability</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ110</td>
<td>Introduction to Computer Problem Solving</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ117</td>
<td>Introduction to Computer Systems</td>
<td>10.0</td>
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</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM513</td>
<td>Business Studies — Accounting</td>
</tr>
<tr>
<td>SM180</td>
<td>Mathematics 1</td>
</tr>
<tr>
<td>SM284</td>
<td>Continuous Probability Distributions and Inference</td>
</tr>
<tr>
<td>SM288</td>
<td>Operations Research</td>
</tr>
<tr>
<td>SQ204</td>
<td>Formal Methods</td>
</tr>
<tr>
<td>SQ210</td>
<td>Programming in C</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
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</thead>
<tbody>
<tr>
<td>SQ310</td>
</tr>
<tr>
<td>Elective (mathematics or computer science)</td>
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</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM404</td>
<td>Project Management A</td>
</tr>
<tr>
<td>Four mathematics subjects</td>
<td>each 10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM504</td>
<td>Project Management B</td>
</tr>
<tr>
<td>Three mathematics subjects</td>
<td>each 10.0</td>
</tr>
<tr>
<td>Complementary studies elective</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Note: From second year onwards the actual mathematics subjects to be taken will be selected from a range of subjects covering mathematics, operations research, applied statistics and in later years computational mathematics.

Details of these subjects with the exception of computational mathematics commence on page 65 of this Handbook. Some non-mathematics subjects may also be available as electives.

Changes to the syllabus may be made in 1993. Details will be available on enrolment.

Options
Students select mathematics, operations research and statistics subjects from the following list for the applied and industrial mathematics degree.

All are one semester duration subjects except Mathematics 1.

Mathematics subjects
(based on a single major for the mathematics and computer science degree)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SM180</td>
<td>Mathematics 1</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM381</td>
<td>Linear Algebra and Geometry</td>
</tr>
<tr>
<td>SM480</td>
<td>Analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM581</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>SM588</td>
<td>Industrial Applications of Operations Research</td>
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</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM288</td>
<td>Operations Research: An Introduction to Problem Solving</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM387</td>
<td>An Introduction to Optimisation</td>
</tr>
<tr>
<td>SM388</td>
<td>An Introduction to Forecasting</td>
</tr>
<tr>
<td>SM487</td>
<td>Queueing Theory and Simulation</td>
</tr>
<tr>
<td>SM488</td>
<td>Financial Modelling</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SM587</td>
<td>Stochastic Models</td>
</tr>
<tr>
<td>SM588</td>
<td>Industrial Applications of Operations Research</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM184</td>
<td>Data Analysis and Probability</td>
</tr>
<tr>
<td>SM284</td>
<td>Continuous Probability Distributions and Inference</td>
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</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SM384</td>
<td>Inference and Regression</td>
</tr>
<tr>
<td>SM484</td>
<td>Experimental Design and Multiple Regression</td>
</tr>
<tr>
<td>SM485</td>
<td>Distribution Theory and Estimation</td>
</tr>
</tbody>
</table>
Year 3
SM584 Multivariate Statistical Methods 10.0
SM585 Sample Survey Design 10.0
SM684 Time Series Analysis 10.0

Note: Some subjects listed as second-year may sometimes be offered in third year and vice-versa.

Application procedure
See entry under 'General information'.

Z052 Computer-aided Biochemistry

VTAC Course Code — SHSB

This program combines studies in chemistry, biochemistry and microbiology.

Biochemistry is the study of the chemistry of living matter based on principles of organic, physical and analytical chemistry. As well as understanding biology and working with biochemicals and biochemical instrumentation, the modern biochemist has to make extensive use of computers. Computers are used to control instrumentation in investigations ranging from alcohol levels in blood to vitamin concentrations in food. Computers are also used to control industrial processes such as fermentations and food processing.

The course in computer-aided biochemistry involves a study of the structure and function of the chemical systems of living organisms and application of this knowledge to many industrial fields such as clinical, pharmaceutical and food chemistry. The course provides a sound background in theory and application of analytical and preparative biochemical techniques. Computing subjects are ancillary but provide awareness and proficiency in modern computer technology and its applications to biochemistry. All aspects of the course are reinforced by paid industrial experience.

Career potential

Graduate biochemists are employed in a wide variety of industries — the manufacture of vaccines and pharmaceuticals, preparation of food products, beverages and stock feed and the preparation of biochemicals for agriculture. Graduates are also employed in hospital laboratories and private pathology laboratories, as well as in medical and veterinary research institutions. Emerging employment opportunities exist in biotechnologies such as waste treatment and the manufacture of specialised biochemicals.

Professional recognition

Graduates are eligible for membership of the Royal Australian Chemical Institute, the Australian Society for Biochemistry and Molecular Biology, the Australian Biotechnology Association and the Australian Society for Microbiology.

Prerequisites (entrance 1994)

Units 1 and 2: four units of mathematics. Units 3 and 4: chemistry and two units of mathematics.

TAFE articulation

Students who have completed the Swinburne TAFE Associate Diploma of Applied Science (Laboratory Technology), with appropriate bridging units TL501, TL502, TL503 may be admitted into second year of the course.

Course structure

Full-time course

(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC154 Chemistry</td>
<td>12.5</td>
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<tr>
<td>SC108 Biology</td>
<td>7.5</td>
</tr>
<tr>
<td>SK190 Computer Science</td>
<td>10.0</td>
</tr>
<tr>
<td>SM1208 Mathematical Methods</td>
<td>10.0</td>
</tr>
<tr>
<td>SP106 Physics or</td>
<td>10.0</td>
</tr>
<tr>
<td>SP108 Physics</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SC254 Chemistry</td>
<td>26.0</td>
</tr>
<tr>
<td>SC208 Biology</td>
<td>12.0</td>
</tr>
<tr>
<td>SM1208 Mathematics</td>
<td>8.0</td>
</tr>
<tr>
<td>SP220 Instrumental Science</td>
<td>4.0</td>
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<td>SC708 Scientific Communications</td>
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<td>SC562 Analytical Biochemistry</td>
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<td>BS619 Business &amp; Management</td>
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<td>SC808 Scientific Communications</td>
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<td>SC662 Analytical Biochemistry</td>
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<td>SC604 Biotechnology</td>
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<td>SC665 Practical Biochemistry</td>
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</tbody>
</table>

ICi is a major supporter of this course. It provided funds for the purchase of molecular graphics equipment as well as continuing support for the industry based learning program.

Application procedure

See entry under 'General information'.

Z051 Computer-aided Chemistry

VTAC Course Code — SHSC

This program combines major studies in chemistry and applied chemistry. Computers are widely used in chemical laboratories to control instruments, manage data and control experiments. This unique chemistry course equips students for the computerised laboratory. All aspects of the course are reinforced by paid industrial experience.
Career potential
Using their knowledge of chemical principles and their application to industrial problems such graduates take up positions with private and public companies or with government and semi-government organisations such as CSIRO. Initially graduates usually work in laboratories associated with manufacturing (industrial and agricultural chemicals, textiles, explosives, fertilizers, detergents, plastics, dyes, paints, pharmaceuticals, etc.) or in the processing of food, coal, oil, gas, minerals, etc.

Further opportunities exist in research, development, technical services, sales, government organisations concerned with health and environment and administration.

Professional recognition
Graduates are eligible for membership of the Royal Australian Chemical Institute.

Prerequisites (entrance 1994)
Units 1 and 2: four units of Mathematics. Units 3 and 4: Chemistry and two units of Mathematics chosen from Space and Number, Reasoning and Data, Change and Approximation, Extensions (C & A).

TAFE articulation
Students who have completed the Swinburne TAFE Associate Diploma of Applied Science (Laboratory Technology), with appropriate bridging units TL501, TL502, TL503 may be admitted into second year of the course.

Course structure
Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC154 Chemistry</td>
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<tr>
<td>SC108 Biology</td>
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<tr>
<td>SK190 Computer Science</td>
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<tr>
<td>SM1208 Mathematical Methods</td>
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</tr>
<tr>
<td>SP106 Physics or</td>
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</tr>
<tr>
<td>SP108 Physics</td>
<td>10.0</td>
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| Semester 2 | |
| SC254 Chemistry | 26.0 |
| SC208 Biology | 12.0 |
| SM1208 Mathematics | 8.0 |
| SP220 Instrumental Science | 4.0 |

| Semester 3 | |
| SC370 Chemistry | 15.0 |
| SC390 Computers in Chemistry | 7.0 |
| SC353 Applied Chemistry | 10.0 |
| SC360 Practical Chemistry | 12.0 |
| SP320 Instrumental Science | 6.0 |

| Semester 4 | |
| SC470 Chemistry | 13.0 |
| SC490 Computers in Chemistry | 7.0 |
| SC414 Industrial Problem Solving | 4.0 |
| SC430 Scientific Communication | 2.0 |
| SC453 Applied Chemistry | 6.0 |
| SC460 Practical Chemistry | 12.0 |
| SP420 Instrumental Science | 6.0 |

| Semester 5 | |
| SC508 Industry Based Learning | 50.0 |
| SC608 Industry Based Learning | 50.0 |

| Semester 6 | |
| SC570 Chemistry | 15.0 |
| SC590 Computers in Chemistry | 6.0 |
| SC708 Scientific Communications | 2.0 |
| SC553 Applied Chemistry | 16.0 |
| SC560 Practical Chemistry | 11.0 |

| Semester 8 | |
| SC670 Chemistry | 10.0 |
| SC690 Computers in Chemistry | 6.0 |
| BS619 Business and Management | 8.0 |
| SC808 Scientific Communications | 2.0 |
| SC653 Process Chemistry | 13.0 |
| SC660 Practical Chemistry | 11.0 |

ICI is a major supporter of this course, providing funds for the purchase of molecular graphics equipment as well as being a continuing supporter of our industry based learning program.

Application procedure
See entry under 'General information'.

Z060 Computer Science (conversion course)

The Bachelor of Applied Science (Computer Science) conversion program is available only for students who have completed an associate diploma which includes computer programming. It is offered full-time over two years and comprises a full computer science major together with a minor sequence in another discipline. Two semesters of mathematics are compulsory for all students who have not passed an equivalent amount of mathematics beyond year 12.

Graduates of the degree will have completed four years of tertiary education in computing, and gained extensive knowledge of computer systems and software development, together with well developed written and verbal communication skills. During the course, experience is gained in programming, systems analysis and design, and project management.

Career potential
Graduates will typically find initial employment as programmers or analysts, and have good prospects for rapid advancement to advanced technical or managerial positions.

Full-time course (1993 syllabus)
Minor sequences are offered in applied mathematics, accounting, economics and organisational behaviour/Marketing. Elective subjects offered, however, will depend upon demand and available resources.

To complete the program, students must pass subjects to the value of 200 credit points. At least 120 credit points must be in computer science subjects. There are no exemptions. Each full-time year of study normally comprises a selection of subjects to the value of 100 credit points taken over two semesters. Most subjects are worth 10.0 credit points so that a standard program comprises five equally weighted subjects per semester. However, subjects in mathematics vary between 7.5, 10.0 and 12.5 credit points, whereas business subjects are normally worth 12.5 credit points.

A minor sequence in another discipline will normally consist of a coherent sequence of subjects to the value of at least 40 but no more than 50 credit points. For example a business minor sequence will comprise four subjects each worth 12.5 credit points.

Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SQ210 Introduction to C Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ314 Software Engineering Systems Analysis</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ305 Database</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180 Mathematics 1</td>
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</tr>
<tr>
<td>Business elective — minor 1</td>
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</tbody>
</table>
Semester 2

SQ10 Advanced C Programming 10.0
SQ12 Systems Programming 10.0
SQ407 Data Communications 10.0
SM180 Mathematics 10.0
Elective — minor 2 12.5

Year 3

Semester 1

SQ613 Team Project 10.0
SQ606 Computing in the Human Context 10.0
Elective 10.0
Elective 10.0
Elective — minor 3 10.0
Semester 2

SQ513 Team Project 10.0
SQ306 Human Computer Interaction 10.0
Elective 10.0
Elective 10.0
Elective — minor 4 10.0

(Computer Science major subjects — 120 credit points.)

Computer Science Electives
Electives in computer science depend upon demand and resources. Electives may include artificial intelligence, COBOL programming, computer architecture, computer graphics, computer organisation, declarative programming, expert systems, formal methods, translator engineering, and object oriented programming.

Application procedure
See entry under 'General information'.

Z063 Computer Science and Software Engineering

VTAC Course Code — SHCS

This program provides an extensive education in contemporary approaches to the analysis, design and implementation of large scale computer systems. The major components of the program may be classified as computer science, software engineering, and software practice.

Computer science is the core content of the program and includes the study of programming methodologies, data structures and algorithms, and operating systems.

Software engineering focuses on aspects of building large scale software systems encompassing methodologies such as functional decomposition, object oriented design, and documentation methods. Software practice exposes students to a variety of situations which are designed to provide experience in problem solving strategies, group dynamics, individual and group communication, resource analysis, critical evaluation and review, and the management of large scale projects.

The program is usually offered as three years of full-time study. A four-year full-time program including a year of industry based learning may be available for some students on a competitive basis.

Career potential
This program aims to produce graduates who have extensive skills in software engineering, particularly relating to large scale systems. Graduates will typically find initial employment as programmers or analysts, and have good prospects for rapid progress to advanced technical or managerial positions.

Those who choose an honours year may go on to a career in computer science research. See pages 56-57.

Professional recognition
This course qualifies graduates at level one (the highest level) of the Australian Computer Society's requirements for professional membership.

Prerequisites (entrance 1994)
Units 3 and 4; two units of mathematics chosen from Space and Number, Reasoning and Data, Change and Approximation, extensions (C & A). Bonus points will be awarded for Information Technology (10%); any mathematics extensions (10%). Applicants who do not satisfy the above requirements may be considered on the basis of factors such as employment, educational background and, in some cases, an interview.

Course structure
Full-time course
(1992 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SM1210 Mathematics 10.0</td>
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<tr>
<td>SQ116 Communication and Learning Skills 10.0</td>
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<tr>
<td>SQ100 Programming in Ada 10.0</td>
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</tr>
<tr>
<td>SQ103 Software Practice 1 10.0</td>
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</tr>
<tr>
<td>SQ117 Introduction to Computer Systems 10.0</td>
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</tbody>
</table>

Semester 2

| SM1210 Mathematics 10.0 |
| SQ100 Programming in Ada 10.0 |
| SQ103 Software Practice 1 10.0 |
| SQ204 Formal Methods 10.0 |
| SQ207 Computer Organisation 10.0 |

Semester 3

| SQ300 Data Structures and Algorithms 10.0 |
| SQ304 Software Engineering 10.0 |
| SQ305 Database 10.0 |
| SQ404 Systems Analysis 10.0 |
| Elective 10.0 |

Semester 4

| SQ613 Computer Science Team Project 10.0 |
| SQ306 Human Computer Interaction 10.0 |
| SQ407 Data Communications 10.0 |
| Elective 10.0 |
| Elective 10.0 |

IBL Semester 1

| SQ523 Industry Based Learning 50.0 |

IBL Semester 2

| SQ623 Industry Based Learning 50.0 |

Semester 5

| SQ606 Computing in the Human Context 10.0 |
| Elective 10.0 |
| Elective 10.0 |
| Elective 10.0 |
| SQ503 Software Practice 3 10.0 |

Semester 6

| SQ604 Object-oriented Programming 10.0 |
| Elective 10.0 |
| Elective 10.0 |
| Elective 10.0 |
| SQ503 Software Practice 3 20.0 |

Computer science elective units available:

| SQ402 Operating Systems 10.0 |
| SQ527 Computer Architecture 10.0 |
| SQ511 Declarative Programming 10.0 |
| SQ411 COBOL Programming 10.0 |
| SQ601 Translator Engineering 10.0 |
| SQ618 Computer Graphics 10.0 |
| SQ419 Artificial Intelligence 10.0 |
| SQ502 Unix Systems Programming 10.0 |
| SQ412 Systems Programming 10.0 |

Note: Either SQ402 (Operating Systems) or SQ412 (Systems Programming) must be selected amongst the electives. SQ502 (Unix Systems Programming) has SQ402 as a prerequisite. Students may therefore not take both SQ502 and SQ412.

Application procedure
See entry under 'General information'.
Computing and Instrumentation

VTAC Course Code — SHCI

This program combines major studies in computer science with scientific instrumentation. Computer science includes the study of programming methodology using the C programming language, data structures and algorithms, software engineering, and the use of operating systems. In later years, studies include computer architecture and computer graphics.

The software emphasis in the computer science part of the program is complemented by the strong computer hardware orientation of instrumentation which is unique to Swinburne and is designed to meet the challenge of ever-increasing sophistication of instruments used in high technology areas. Emphasis is on the design and use of instruments to detect and measure physical phenomena, process and analyse information, and control various processes.

Special areas of interest in the program include computer based imaging, optical and nuclear instrumentation, interfacing, and analogue and digital signal processing. Areas of study in this major include nuclear and optical instrumentation together with a strong emphasis on information processing, digital and analogue electronics.

Career potential

Graduates are employed in areas ranging from industrial, clinical, academic and government to pure research and development fields.

Professional recognition

Accredited by Australian Computer Society as a level one course. Graduates eligible for associate membership. After four years relevant work experience, a graduate can apply for full membership.

Prerequisites (entrance 1994)

Units 1 and 2; four units of Mathematics. Units 3 and 4: Physics, two units of Mathematics chosen from Space and Numbers, Reasoning and Data, Change and Approximation, Extensions (C & A). Bonus points will be awarded for:

Information Technology (10%).

Applicants who do not satisfy the above requirements may be considered on the basis of factors such as technical background, employment and, in borderline cases, an interview. Such special entry is not available to applicants who have within the last three years failed any of the formal entry assessments.

A limited number of places may be available to students without VCE Physics. These students will undertake a special first semester program.

Course structure

Full-time course

(1991 syllabus)

Semester 1

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<td>Physics 1</td>
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<td>Intro. to Computer Systems</td>
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Semester 2

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<td>SP1200</td>
<td>Physics 1</td>
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Semester 3

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<td>SP3400</td>
<td>Physics 2</td>
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<td>SP3410</td>
<td>Analogue and Optical Techniques</td>
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<td>SP3430</td>
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<td>Physics 2</td>
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<tr>
<td>SP3410</td>
<td>Analogue and Optical Techniques</td>
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<td>SP3430</td>
<td>Interfacing and Nuclear Techniques</td>
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Semester 5

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Semester 6

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<td>SP623</td>
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Semester 7

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<td>SP501</td>
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<td>SP510</td>
<td>Scientific Instrumentation A</td>
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<td>Scientific Instrumentation B</td>
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Semester 8

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<tr>
<td>SP601</td>
<td>Stand-alone Instrumentation</td>
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<tr>
<td>SP610</td>
<td>Instrumentation Systems A</td>
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<td>SP630</td>
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<tr>
<td>SQ613</td>
<td>Computer Science Team Project</td>
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</tr>
<tr>
<td></td>
<td>Computer Science Elective</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Application procedure

See entry under 'General information'.

Environmental Health

VTAC Course Code — SHHE

This is the statutory qualifying course for environment health officers in Victoria. It is unique to Swinburne and is designed to develop the technological, legal and administrative skills needed to carry out the complex tasks of public and occupational health surveillance, and the protection of the environment. The training offered is interdisciplinary and enables graduates to communicate effectively with experts in the relevant specialised fields.

It normally takes the form of a four-year program of cooperative education (industry based learning) in which students attend the University for a total of six semesters, and gain practical professional experience for two semesters. Swinburne arranges the professional experience for full-time students.

Career potential

The majority of environmental health officers are employed by local government authorities and by the State Health Department but many work with statutory authorities such as the Environment Protection Authority. Opportunities also exist in other state and federal departments and in the non-government sector.

Environmental health officers can thus be involved in varied duties such as infectious disease control and immunisation, enforcement of health standards in food establishments, restaurants, hotels, etc., food quality surveillance, the control of domestic waste disposal, industrial hygiene, pollution control and health education.

Opportunities also exist in industry, particularly the food industry, where environmental health officers assist with quality control work and in complying with health and
pollution laws. The number of these opportunities is increasing.
Some environmental health graduates are self-employed as consultants.

**Professional recognition**
Graduates are eligible for membership of the Australian Institute of Environmental Health. Students can become student members while doing the course.

**Prerequisites (entrance 1994)**
Units 1 and 2: four units of Mathematics. Units 3 and 4: two units of Mathematics, plus one of Biology, Chemistry, or Physics. Bonus points will be awarded for: Chemistry (15%).

**Course structure**

**Full-time course**

*(1991 syllabus)*

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit points</th>
</tr>
</thead>
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<tr>
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<td>MP107</td>
<td>Engineering Drawing</td>
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</tr>
<tr>
<td>1</td>
<td>SC100</td>
<td>Environmental Health</td>
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</tr>
<tr>
<td>1</td>
<td>SC109</td>
<td>Biology</td>
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<tr>
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<td>SC1500</td>
<td>Introductory Chemistry</td>
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<td>1</td>
<td>SM110</td>
<td>Mathematical Methods</td>
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<tr>
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<td>BS141</td>
<td>Introductory Law</td>
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<tr>
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<td>SC252</td>
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<td>2</td>
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<td>SC567</td>
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<td>SP4190</td>
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<td>SC569</td>
<td>Urban Ecology</td>
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<td>Health Promotion</td>
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<td>8</td>
<td>SC668</td>
<td>Research Project</td>
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</table>

**Application procedure**
See entry under 'General information'.

**ZO59 Mathematics and Computer Science**

**VTAC Course Code — SHMC2416 (Hawthorn campus) SLMC1422 (Mooroolbark campus)**

This program combines major studies in computer science with a mathematics major comprising studies in operations research and applied statistics.

**Computer science**
Includes the study of programming methodology using the C programming language, data structures and algorithms, software engineering, and databases.

**Operations research**
The scientific study of problems arising in commerce and industry. Students examine loosely structured practical problems at an early stage in the program and later work in groups to undertake real projects for external clients. Computer methods are used extensively in both the classes and group work.

**Applied statistics**
Concerned with the collection and analysis of data. Students will study statistical methods for sampling, for making inferences from samples and for modelling data using methods such as regression. Studies in applied statistics will equip students with the ability to plan statistical investigations and to analyse data using specialist statistical computer packages.

**Honours program**
Suitably qualified candidates may be admitted to an honours year.

**Multi-modal learning — Mooroolbark campus**
At the Mooroolbark campus this course will be offered in multi-modal format. Using an individual portable computer, students will undertake increasing parts of their study independently. The computer will be a means of instruction, communication and computation that can be used at home, on campus or at local study centres. This will lead to a reduction in the time needed to be spent in formal instruction on campus.

**Industry based learning (IBL)**
The optional four-year program is taken in the IBL format which includes one year of paid work experience.

**Career potential**
The mathematics and computer science major sequences provide a valuable preparation for potential operations researchers, management scientists, project leaders, statisticians, economic analysts, quality control scientists, systems analysts, computer scientists and teachers.

**Professional recognition**
This program is accredited by the Australian Computer Society as a Level 1 course. Graduates are eligible for associate membership. After four years of relevant work experience, a graduate can apply for full membership. Graduates are also eligible for membership of the Australian Society of Operations Research after one to two years of work experience. Students can become student members while doing the course and then apply for full membership upon graduation.

**Prerequisites (entrance 1994)**
Units 1 and 2: four units of mathematics. Units 3 and 4: two units of mathematics chosen from Space and Number, Reasoning and Data, Change and Approximation and Extensions (Change and Approximation).
Applicants who do not satisfy the above requirements may be considered on the basis of factors such as employment, educational background, and in some cases, an interview.

**Syllabus change**

The syllabus for this program changed in 1993. All students who commenced in or before 1992 will complete the 1991 syllabus and all those students commencing later than 1993 will complete the 1993 syllabus. The 1991 and the 1993 syllabus is noted below.

**Course structure**

(1991 syllabus for students who commenced no later than 1992)

### Year 3

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM504</td>
<td>Project Management B 5.0</td>
</tr>
<tr>
<td>SM525</td>
<td>Operations Research 5 10.0</td>
</tr>
<tr>
<td>SM526</td>
<td>Applied Statistics 5 10.0</td>
</tr>
<tr>
<td>SQ305</td>
<td>Database 10.0</td>
</tr>
</tbody>
</table>

One subject chosen from:

- SQ500 Concurrent Programming 10.0
- SQ502 UNIX Systems Programming 10.0
- **Computer Science Elective 1**

Another subject chosen from:

- BS626 Behaviour in Organisations 5.0
- SM632 Social Change in the Modern World 5.0

### Year 4

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM608</td>
<td>Industry Based Learning 50.0</td>
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</tbody>
</table>

### Semester 7

| SM708 | Industry Based Learning 50.0 |

### Semester 8

| SM609 | Mathematics Project 7.5 |
| SM625 | Operations Research 6 7.5 |
| SM626 | Applied Statistics 6 7.5 |
| SQ407 | Data Communication 10.0 |
| SQ613A | Computer Science Team Project 7.5 |

One subject chosen from:

- SQ306 Human Computer Interaction 10.0
- SQ411 COBOL 10.0
- SQ601 Translator Engineering 10.0
- SQ604 Subject Oriented Programming 10.0
- SQ606 Computing in the Human Context 10.0
- SQ618 Computer Graphics 10.0
- SQ619 Expert Systems 10.0

(1993 syllabus for students who commenced in 1993 or later)

### Year 1

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM131</td>
<td>Communication Skills 10.0</td>
</tr>
<tr>
<td>SM180</td>
<td>Mathematics 1 10.0</td>
</tr>
<tr>
<td>SM185</td>
<td>Applied Statistics 1 10.0</td>
</tr>
<tr>
<td>SQ110</td>
<td>Introduction to Computer Problem Solving 10.0</td>
</tr>
<tr>
<td>SQ117</td>
<td>Introduction to Computer Systems 10.0</td>
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</table>

### Semester 2

| BS513 | Business Studies — Accounting 10.0 |
| SM180 | Mathematics 1 10.0 |
| SM288 | Operations Research: An Introduction to Problem Solving 10.0 |
| SQ214 | Formal Methods 10.0 |
| SQ210 | Programming in C 10.0 |

### Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SM383</td>
<td>Mathematics 2 10.0</td>
</tr>
<tr>
<td>SM388</td>
<td>Forecasting and Regression 10.0</td>
</tr>
<tr>
<td>SQ310</td>
<td>Advanced C Programming 10.0</td>
</tr>
<tr>
<td>SQ305</td>
<td>Database 10.0</td>
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<tr>
<td>SQ314</td>
<td>Software Engineering/Systems Analysis 10.0</td>
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### Year 3

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
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<tr>
<td>SM404</td>
<td>Project Management A 10.0</td>
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<tr>
<td>SM387</td>
<td>Intro. to Optimisation 10.0</td>
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<tr>
<td>SM484</td>
<td>Experimental Design and Multiple Regression 10.0</td>
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<tr>
<td>SQ407</td>
<td>Data Communications 10.0</td>
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<td></td>
<td>Computer Science elective 10.0</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SM504</td>
<td>Project Management B 5.0</td>
</tr>
<tr>
<td>SM525</td>
<td>Operations Research 10.0</td>
</tr>
<tr>
<td>SM526</td>
<td>Applied Statistics 10.0</td>
</tr>
<tr>
<td></td>
<td>Two Computer Science electives each 10.0</td>
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<tr>
<td></td>
<td>Complementary Studies elective 5.0</td>
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### Year 4

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<tr>
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<th>Credit points</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
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<th>Credit points</th>
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<tbody>
<tr>
<td>SM625</td>
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<tr>
<td></td>
<td>Two Computer Science electives each 10.0</td>
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<tr>
<td>SQ613A</td>
<td>Computer Science Team Project 7.5</td>
</tr>
<tr>
<td>SM609</td>
<td>Mathematics Project 7.5</td>
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</tbody>
</table>

Note: From second year onwards the actual subjects to be taken in mathematics and as computer science electives will be selected from a range of subjects. Details will be provided to students after enrolment.

Changes to the syllabus may be made in 1993. Details will be available on enrolment.

**Application procedure**

See entry under ‘General information’.

### ZO61

**Medical Biophysics and Instrumentation**

**VTAC Course Code — SHSI**

This program is unique to Swinburne and combines major studies in medical biophysics with scientific instrumentation. It is designed to produce research and development staff for hospitals and industry. Medical biophysics emphasises an understanding of human physiological processes, relevant aspects of pathophysiology, and biomedical instrumentation. It bridges the gap between medicine and the physical sciences.

Medical biophysics includes the study and monitoring of such systems as membranes, nerves, muscles, the heart and circulation, the kidneys, respiration, and the brain. Biomechanics, sports science and the basis of physical therapy are also included.

Medical biophysics is complemented by the study of scientific instrumentation which provides students with a sound basis in measurement and instrumentation principles and their use in the development of instrumentation systems for various areas of applied science and technology.

The course includes studies of both computer-based and non-computer-based instruments, used in isolation or as systems, and their applications to imaging, nuclear, optical and general scientific and industrial laboratories. Emphasis is on electronic techniques, analogue and digital signal processing and on the basic interfacing of transducers with microprocessors and computers.
Career potential
Graduates may take up careers in industry or as hospital scientists or technologists. In industry, there are opportunities for graduates to take up development and consultancy positions in organisations serving the medical and biological professions. The manufacture of biomedical instrumentation is a growing area of employment opportunity.

In hospitals, duties may involve biomedical research, routine clinical measurement responsibility, the development of specialised electronic equipment and the maintenance of equipment already in operation. Graduates are employed in most hospital departments including cardiology, neurology, thoracic medicine, physical sciences, anaesthesiology and medical electronics.

Professional recognition
Graduates are eligible for membership of the Australian Institute of Physics and the Australasian College of Physical Scientists and Engineers in Medicine.

Prerequisites (entrance 1994)
Units 1 and 2: four units of Mathematics. Units 3 and 4: Physics, two units of Mathematics chosen from Space and Number, Reasoning and Data, Change and Approximation, Extensions (C & A).

A limited number of places may be offered to students without VCE Physics. These students will undertake a special first semester program.

Course structure
Full-time course
(1991 syllabus)

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<td>SP1210 Introduction to Instrumentation</td>
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<td>SM1215 Mathematical Methods</td>
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<tbody>
<tr>
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<td>SP1209 Physics</td>
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<td>SP1224 Introductory Biophysics</td>
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<td>SP1210 Introduction to Instrumentation</td>
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<td>SM1215 Mathematical Methods</td>
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<td>SP3430 Interfacing and Nuclear Techniques</td>
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<td>SP3410 Analogue and Optical Techniques</td>
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<td>SP3430 Interfacing and Nuclear Techniques</td>
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<td>SP424 Clinical Monitoring A</td>
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<td>SP501 Signals and Systems</td>
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<tr>
<td>SP510 Scientific Instrumentation A</td>
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<td>SP530 Scientific Instrumentation B</td>
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<td>SP524 Biophysics (Neurosciences A)</td>
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<tr>
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<td>SP5609 Physics 5-6</td>
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<table>
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<tr>
<td>SP5609 Physics 5-6</td>
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<tr>
<td>SP602 Special Project</td>
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<tr>
<td>SP610 Instrumentation Systems A</td>
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<tr>
<td>SP630 Instrumentation Systems B</td>
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<tr>
<td>SP624 Biophysics (Neurosciences B)</td>
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<td>SP625 Applied Biophysics B</td>
<td>8.0</td>
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<tr>
<td>SP626 Applied Neurosciences</td>
<td>5.0</td>
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</table>

Application procedure
See entry under 'General information'.

Z062 Psychology and Rychophysiology

VTAC Course Code — SHSP

This program is unique to Swinburne and combines major studies in psychology and rychophysiology. The psychology major emphasises vocational skills and knowledge relevant to applied fields. Later year studies include personality, cognition and human performance, methods and measurement in psychology, and counselling and interviewing.

Rychophysiology emphasises an understanding of the physiological processes relevant to the study of psychology. Cardiorespiratory, endocrinological, neuromuscular and immunological processes are treated in an integrated fashion in examining the physiological responses to stress. Disorders of brain function including schizophrenia, Alzheimers disease and brain damage are also considered. Computers and instrumentation are used to record and analyse physiological signals relevant to cognition and behaviour. The analysis of brain electrical activity and its relation to cognitive processes is emphasised.

This course may be undertaken within the Faculty of Applied Science or the Faculty of Arts and aims to produce graduates who are qualified to take up professional careers in psychology. It will contribute towards qualification for associate membership of the Australian Psychological Society and will be a suitable introduction to occupations involving aspects of clinical psychology, ergonomics, neuropsychology, and research.

The special emphases of the course are to develop technical skills in the use of monitoring instrumentation specific to recording biological signals related to behaviour, insight into the biological basis of behaviour and to allow detailed study of both normal and abnormal specific human neurophysiological functions.

For details of psychology subjects see psychology major, Faculty of Arts.

Career potential
Employment opportunities are available in the areas of community health services, clinics and institutions involved in the assessment and management of persons with neurological and psychophysiological problems. Graduates will also be well prepared for careers in the areas of clinical psychology concerned with the physiological effects of emotional and mental states, sports psychology and ergonomics.

Professional recognition
After an additional (fourth) year of study, graduates are eligible for associate membership of the Australian Psychological Society.
**Prerequisites (entrance 1994)**
Units 1 and 2: four units of Mathematics. Units 3 and 4: either Physics, Chemistry or Biology, and either Reasoning and Data, Space and Number, or Change and Approximation. Applicants who do not satisfy the above requirements may be considered on the basis of factors such technical background, employment and, in some cases, an interview.

*** Alternative entry is available through the Arts Faculty, however different prerequisites apply.

**Course structure**

**Full-time course — Applied Science only**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>AY100 Psychology</td>
<td>12.5</td>
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<tr>
<td>SP132 Introductory Psychophysiology</td>
<td>12.5</td>
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<tr>
<td>SP135 Monitoring Instrumentation</td>
<td>10.0</td>
</tr>
<tr>
<td>SM106 Mathematics</td>
<td>7.5</td>
</tr>
<tr>
<td>SC133 Chemistry</td>
<td>7.5</td>
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</tbody>
</table>

**Semester 2**

| AY101 Psychology  | 12.5 |
| SP231 Monitoring Technology  | 10.0 |
| SP233 Psychophysiological Systems  | 19.0 |
| SK290 Computer Science  | 8.5 |

**Semester 3**

| AY203 Development Psychology  | 16.5 |
| SP331 Neurohumoral Bases of Psychophysiology  | 23.5 |
| SM278 Design and Measurement 2A  | 10.0 |

**Semester 4**

| AY202 Cognition and Human Performance  | 16.5 |
| AY204 Social Psychology  | 16.5 |
| SP431 Psychophysiology of Perception  | 17.0 |

**Semester 5**

| AY312 The Psychology of Personality  | 16.5 |
| AY319 Psychological Measurement  | 12.5 |
| SP527 Neurophysiology of the Normal Brain  | 12.5 |
| SP528 Higher Cortical Function  | 12.5 |

**Semester 6**

| AY313 Cognition and Human Performance  | 16.5 |
| AY320 Psychological Foundations of Counselling  | 8.5 |
| SP631 Neurophysiology of Mental Disorders  | 12.5 |
| SP632 Psychophysiology Project  | 12.5 |

**Application procedure**

See entry under 'General information'.

**IO50 Bachelor of Information Technology**

**Manager**

G.A. Murphy, BCom(Melb), CPA

**Administrative Officer**

To be appointed

The course is offered only as a full-time program of three years’ duration. Students are actively engaged in the course for an average of forty-four weeks each year. There are eight segments in the course — four semesters, two summer terms and two twenty-week periods of industry based learning. These provide a course which is essentially a four year course completed in three years.

Swinburne awards a scholarship to each student admitted to the course. Scholarship levels are expected to be an average of $9,000.

**Career potential**

The course equips graduates to apply information technology within business and industry and provides them with an appropriate grounding in management education to prepare them for future roles in management.

**Prerequisites (entrance 1994)**
Units 1 and 2: four units of Mathematics. Units 3 and 4: one of Change and Approximation, Reasoning and Data, or Space and Numbers.

**Segment 1**

<table>
<thead>
<tr>
<th>Credit points</th>
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<tbody>
<tr>
<td>A110 Computer Fundamentals</td>
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<tr>
<td>A102 Introduction to Programming</td>
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<tr>
<td>A103 Business Applications and Systems 1</td>
</tr>
<tr>
<td>A105 Behaviour and Communications in Organisations</td>
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</table>

**Segment 2**

<table>
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<th>Credit points</th>
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<tr>
<td>IT201 Decision Analysis</td>
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<td>IT202 COBOL Programming</td>
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<td>IT203 Business Applications and Systems 2</td>
</tr>
<tr>
<td>Plus 2 Non-competing Electives each</td>
</tr>
</tbody>
</table>

**Segment 3 (Summer Term)**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT301 Systems Software 1</td>
</tr>
<tr>
<td>IT302 Organisation Behaviour</td>
</tr>
<tr>
<td>IT303 Data Base Management Systems 1</td>
</tr>
</tbody>
</table>

**Segment 4**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT401 Industry Based Learning</td>
</tr>
</tbody>
</table>

**Segments 5 and 6**

Ten units must be studied in these two consecutive segments. They can be taken in any order that prerequisites allow, and must include six core units, two chosen from the specialist units on offer and two non-competing electives.

**Core units**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT501 Systems and Information Analysis 1</td>
</tr>
<tr>
<td>IT503 Data Base Management Systems 2</td>
</tr>
<tr>
<td>IT504 Data Communications 1</td>
</tr>
<tr>
<td>IT509 Software Engineering 1</td>
</tr>
<tr>
<td>IT601 Systems and Information Analysis 2</td>
</tr>
<tr>
<td>IT609 Software Engineering 2</td>
</tr>
</tbody>
</table>

**Specialist units**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT502 Systems Software 2</td>
</tr>
<tr>
<td>IT603 Data Base Management Systems 3</td>
</tr>
</tbody>
</table>

Other approved specialist computing units may be chosen from either the Bachelor of Applied Science or the Bachelor of Business courses.

**Segment 7**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT701 Industry Based Learning</td>
</tr>
</tbody>
</table>

**Segment 8 (Summer Term)**

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT803 Emerging Information Technologies</td>
</tr>
<tr>
<td>IT804 Computing in the Human Context</td>
</tr>
</tbody>
</table>

* All units will not be offered each semester.

**Application procedure**

See entry under 'General information'.

**Regulations**

The Course Regulations are available from the Department of Computer Science and each student will receive a copy at the beginning of the course.

**Z065 Honours Year in Computer Science**

A one year full-time program that follows the completion of all requirements for a three-year degree. The program is designed for students who have an interest in research, and is particularly geared to those who are contemplating progressing to postgraduate studies.

Normally to be eligible for this degree a student would have achieved a grade point average of credit or above on the best seventy-five per cent (75%) of the post-first year units. However, it is likely that a performance in excess of this minimum will be necessary to gain selection.

To qualify a student must undertake a program involving three semester-length coursework units, one reading unit,
and a research topic leading to the production of a minor thesis. The reading unit will involve one semester of directed reading of research methods relevant to the proposed minor thesis and the theoretical underpinning of the thesis topic. The three coursework units will consist of at least two units at the masters by coursework or honours level and at most one unit at the third year undergraduate level which has not been attempted previously. Normally at least two of the course units will be from computer science masters and honours units, which are listed below:

**Coursework units**

*(1993) syllabus*

Compulsory units Credit points
SQ903 Honours Reading Unit 12.5
SQ908 Honours Computer Graphics 12.5
SQ913 Honours Research Project 50.0

Plus three of the following:

IT904* The Software Process 12.5
IT906 Human-Computer Interaction 12.5
IT909 Foundations of Intelligent Systems 12.5
IT914 Systems Analysis 12.5
IT916 Programming the User Interface 12.5
IT924 Object-Oriented Design and Programming 12.5
IT926 Interactive Systems Development 12.5
IT929 Adaptive Intelligent Systems 12.5
IT934 Real-Time Systems 12.5
IT944* Advanced Database Technology 12.5

* Units in the Master of Information Technology.

Application procedure
See entry under 'General information'.

Z066 Honours Year in Medical Biophysics
See below Z068.

Z067 Honours Year in Scientific Instrumentation
See below 2068.

Z068 Honours Year in Medical Biophysics and Scientific Instrumentation

These three programs provide opportunities for selected students, who have achieved a high standard in the major areas of study, medical biophysics or scientific instrumentation, to continue their undergraduate studies to an honours level. Subjects can be combined from both the scientific instrumentation and medical biophysics areas of study to allow students to graduate with honours in one of the three available programs.

Topics in the medical biophysics program include: membrane biophysics, biophysical techniques, information processing within neural systems, clinical, cortical, subcortical, and EEG/EEGscapl surface recording techniques, clinical exercise testing, and ergometry and work and power assessment. Scientific instrumentation topics include: artificial neural network applications; industrial, scientific and medical applications of nuclear radiation; specialised instrumentation electronics, including microcontroller applications; lasers and their applications, Fourier transforms and imagery.

In addition to the two project units, students must complete a minimum of four subjects in medical biophysics or scientific instrumentation, or a minimum of two subjects from each of medical biophysics and scientific instrumentation. The remaining four hours must be made up from one or more acceptable subjects, convened by the Physics Department or by another department or school, subject to the approval of the Head of Physics Department and the convening department or school. Credit for industry based learning may be given toward the major project if such experience is deemed appropriate and of sufficient merit. Contact the department for more detailed information.

**Course structure**

**Full-time course**

*(1993 syllabus)*

<table>
<thead>
<tr>
<th>Semester 1 (6 units and minor project)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical biophysics subjects:</td>
<td></td>
</tr>
<tr>
<td>SP711 Biosensors and Membranes</td>
<td>6.0</td>
</tr>
<tr>
<td>SP712 Physics of Biomaterials</td>
<td>6.0</td>
</tr>
<tr>
<td>SP713 Neurophysiological Techniques A</td>
<td>6.0</td>
</tr>
<tr>
<td>SP714 Neurophysiological Techniques B</td>
<td>6.0</td>
</tr>
<tr>
<td>SP716 Exercise Biophysics</td>
<td>6.0</td>
</tr>
<tr>
<td>Scientific instrumentation subjects:</td>
<td></td>
</tr>
<tr>
<td>SP751 Neural Network Applications</td>
<td>6.0</td>
</tr>
<tr>
<td>SP752 Advanced Instrument Electronics</td>
<td>6.0</td>
</tr>
<tr>
<td>SP753 Optical Instrumentation</td>
<td>6.0</td>
</tr>
<tr>
<td>SP754 Microcontroller Design Techniques</td>
<td>6.0</td>
</tr>
<tr>
<td>SP755 Nuclear Instrumentation</td>
<td>6.0</td>
</tr>
<tr>
<td>SP756 Advanced Instrumentation</td>
<td>6.0</td>
</tr>
<tr>
<td>SP722 Minor Project</td>
<td>14.0</td>
</tr>
</tbody>
</table>

| Semester 2 | Major Project | 50.0 |

For more information please contact the Applied Chemistry Department for more detailed information.

2069 Honours Year in Environmental Health

This program provides an opportunity for selected students, who have achieved a high standard during the environmental health course, to graduate with a degree with honours. For more information please contact the Applied Chemistry Department.

Z071 Honours Year in Mathematics

An honours year program provides high-achieving students with an opportunity to pursue their undergraduate studies at an advanced level into an extra year of research-oriented study. It allows enhancement of academic results at a time when the job market is increasingly competitive with employers placing more emphasis on academic results. It is also the first step towards a Masters or Ph.D. postgraduate degree.

The course requires one academic year of full-time study following the completion of all requirements for a Bachelor of Applied Science degree. Students who have completed Swinburne's Bachelor of Applied Science (Mathematics and Computer Science) or Bachelor of Applied Science (Applied and Industrial Mathematics) at a sufficiently high standard will be considered for the honours program. Students who have completed any other degree with a major study in mathematics, statistics, operations research, computer science or other quantitative discipline deemed appropriate may also be considered.

**Course structure and student workload**

Honours students will undertake a program involving a short course in research techniques, four coursework subjects of 12.5 credit points each, one reading program of 12.5 credit points, and a research project over two semesters leading to the production of a minor thesis worth 37.5 credit points.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to research skills</td>
<td>no formal credit</td>
</tr>
<tr>
<td>Reading Program</td>
<td>12.5</td>
</tr>
<tr>
<td>Course Work Subject</td>
<td>12.5</td>
</tr>
<tr>
<td>Course Work Subject</td>
<td>12.5</td>
</tr>
<tr>
<td>Research Project</td>
<td>12.5</td>
</tr>
</tbody>
</table>

SM700
SM711

57
The reading program will involve one semester of directed reading of relevant research methodology and the theoretical underpinnings of the thesis topic. The minor thesis supervisor, in consultation with the Mathematics Department Honours Committee, will prepare such a reading program for each student at the commencement of the semester.

Coursework subjects
The four coursework subjects will consist of:
- at least two Department of Mathematics subjects at the Masters by Coursework or honours level
- at most one subject at the third year level which has not been attempted previously
- other subjects of a relevant standard.

In special cases, students may be allowed to choose subjects from other departments or from other institutions. In particular, students may be permitted to choose some subjects from the undergraduate, honours or masters program in Computer Science.

Honours subjects offered by the Mathematics Department will be chosen from the list below, but will vary from year to year depending on availability and current interests of staff and prospective students.

SM710 Advanced Mathematical Programming
SM705 Computing Techniques and Packages
SM706 Decision and Risk Analysis
SM707 Differential Equations
SM709 Industrial Operations Management
SM704 Mathematical Methods
SM703 Stochastic Processes

The following subjects from the Masters degree in Social Statistics may also be suitable.

SM744 Statistical Modelling 12.5
SM746 Multivariate Statistics 2 12.5
SM747 Secondary Data Analysis 12.5
SM752 Advanced Statistical Computing 12.5

Research project
Students undertake a research and/or industrial project worth 37.5 credit points into a nominated topic. The topic will require students to acquire appropriate research methodology and allow scope for the demonstration of original thought. Projects in association with industry will be encouraged. In such projects joint supervision with industry representatives is anticipated. The minor thesis normally would not exceed 15,000 words, and publication of results is encouraged.

Postgraduate course information

Z077 Graduate Certificate of Applied Science (Computer Science)

The course is designed to teach the crafting of software in a UNIX system environment and concentrates on developing programming skills in the languages C and C++.

The Graduate Certificate of Applied Science (Computer Science) involves one year of part-time study. The course consists of the first four units of the part-time Graduate Diploma of Applied Science (Computer Science) and would require a class attendance commitment of eight hours per week over two semesters.

Entry is open to applicants with a degree in a discipline other than computer science, or to applicants with at least two years experience in the computing industry.

Course structure
(1993 syllabus)  

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>Programming in C QQ700</td>
</tr>
<tr>
<td>12.5</td>
<td>UNIX Systems Programming QQ702</td>
</tr>
<tr>
<td>12.5</td>
<td>Advanced C Programming QQ710</td>
</tr>
<tr>
<td>12.5</td>
<td>Systems Analysis and Software Engineering QQ714</td>
</tr>
</tbody>
</table>

Students who complete the Graduate Certificate of Applied Science (Computer Science) with good results may be admitted to the Graduate Diploma of Applied Science (Computer Science) with advanced standing.

Application procedure
See entry under 'General information'.

Z076 Graduate Certificate of Applied Science (Social Statistics)

This course is designed for graduates in the humanities and social sciences who have a professional interest in the use of statistics. It is also applicable to other graduates who have a need to use statistics in their work but have not had sufficient or current training in the area. It concentrates on practical skills and enables participants to broaden their theoretical and practical knowledge of the basic areas of social statistics.

The course is open to graduates in any discipline. Non-graduates with a suitable background may be admitted to the program.
The Graduate Certificate in Social Statistics is offered as a part-time program over one year. The class contact hours will normally be four hours per night, two nights per week consisting of a combination of lecture and practical work as applicable to the topic.

Course structure

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM732 Survey Research Methods</td>
<td>12.5</td>
</tr>
<tr>
<td>SM742 Elementary Statistical Modelling</td>
<td>12.5</td>
</tr>
<tr>
<td>SM750 Basic Statistical Computing</td>
<td>12.5</td>
</tr>
<tr>
<td>SM751 Introduction to Data Analysis</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Note: No exemptions are available to candidates for the Certificate.

Application procedure

See entry under 'General information'.

Z081 Graduate Diploma of Applied Science (Applied Colloid Science)

This program is designed for graduates with a background in chemistry who have a professional interest in the application of surface and colloid science to industrial problems. It is suitable for staff engaged in production, research and development, technical sales and service, and management for industry or government establishments.

The program is a two-year (four semester) part-time course involving up to eight hours per week (two evenings). Each topic runs for five weeks (one evening per week). Under special circumstances, the course may be offered on a full-time basis.

The program includes a variety of topics designed to cover the requirements of a wide range of industries. It comprises, in semesters one and three, a compulsory core of lectures and practical work which acquaints the student with the fundamental properties of colloids and interfaces. Semester two and four are devoted to a series of elective subjects which students choose from according to their interests and needs. Electives may also be offered during semesters one and three.

The first year of part-time study is common to that of the corresponding Master by coursework program.

Entry to the Graduate Diploma of Applied Science (Applied Colloid Science) is open to applicants with a first tertiary qualification in engineering or science. An applicant whose experience in chemistry is considered to be inadequate is required to undertake a course in physical chemistry prior to admission.

Course structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC716 Basic Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC717 Basic Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC733 Practical Techniques in Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC734 Practical Techniques in Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC736 Research Skills, Part 1</td>
<td>5.0</td>
</tr>
<tr>
<td>SCXXX Elective Unit (One)</td>
<td>7.5</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Two)</td>
<td>7.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC718 Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719 Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC735 Elective Practical Skills</td>
<td>7.5</td>
</tr>
<tr>
<td>SC738 Minor Research Project</td>
<td>7.5</td>
</tr>
<tr>
<td>SC737 Research Skills, Part 2</td>
<td>5.0</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Three)</td>
<td>7.5</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Four)</td>
<td>7.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC716 Basic Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC717 Basic Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC733 Practical Techniques in Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC734 Practical Techniques in Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC736 Research Skills, Part 1</td>
<td>5.0</td>
</tr>
<tr>
<td>SCXXX Elective Unit (One)</td>
<td>7.5</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Two)</td>
<td>7.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC718 Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719 Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC735 Elective Practical Skills</td>
<td>7.5</td>
</tr>
<tr>
<td>SC738 Minor Research Project</td>
<td>7.5</td>
</tr>
<tr>
<td>SC737 Research Skills, Part 2</td>
<td>5.0</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Three)</td>
<td>7.5</td>
</tr>
<tr>
<td>SCXXX Elective Unit (Four)</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Electives

Four elective subjects are to be chosen from the following:

- SC739 Colloid Rheology 7.5
- SC740 Chemistry of Surface Coatings 7.5
- SC741 Physical Properties of Surface Coatings 7.5
- SC742 Corrosion and Protection of Metals 7.5
- SC743 Food Colloids 7.5
- SC744 Chemistry of Surfactants 7.5
- SC745 Solution Behaviour of Surfactants 7.5
- SC746 Advanced DLVO Theory 7.5
- SC747 Adsorption from Solution 7.5
- SC748 Water Treatment Technology 7.5
- SC749 Polymer Flocculation 7.5
- SC750 Detergency 7.5
- SC751 Emulsion Technology 7.5
- SC752 Polymer Stabilisation Technology 7.5
- SC753 Thin Films and Foams 7.5
- SC754 Light Scattering and Concentrated Dispersions 7.5
- SC755 Surface Chemistry of Clays and Coal 7.5
- SC756 Mineral Processing 7.5

These elective subjects will not all be offered in any one year. Their availability will be determined by student demand and the list may be augmented to meet student's requirements.

Application procedure

See entry under 'General information'.

Z084 Graduate Diploma of Applied Science (Biomedical Instrumentation)

A two year part-time program, or one-year full-time, intended for graduates in a medical, scientific or engineering discipline who require a detailed knowledge of the design, construction and operation of modern biomedical instrumentation. It offers training in quantitative techniques and in specific instruments and their applications.

This option is designed to serve the needs of graduates working in the biomedical area. It offers training in instrumentation and quantitative techniques together with the biomedical applications of these techniques.

Each subject comprises fifty-two hours of class time (one evening per week for one semester). Enrolment in introductory subjects must be approved in each case by Head, Physics Department.

To qualify for the award a student must complete eight of the subjects listed below of which one must be the project unit. Students who complete four advanced subjects of the graduate diploma at an acceptable level will be permitted to transfer to the corresponding Master by coursework program.

Entry to biomedical instrumentation is open to applicants with a first tertiary qualification in medicine, engineering and biological sciences. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications or with less than the usual entry qualifications.

Course structure

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1992 syllabus) Introductory unit</td>
</tr>
<tr>
<td>SP555 Introduction to Biophysical Systems</td>
</tr>
<tr>
<td>Biomedical units</td>
</tr>
<tr>
<td>SP531 Biophysical Systems and Techniques 12.5</td>
</tr>
<tr>
<td>SP532 Clinical Monitoring Techniques 12.5</td>
</tr>
<tr>
<td>SP534 Neurophysiological Techniques 12.5</td>
</tr>
</tbody>
</table>
Instrumentation units
- SP541 Signal and Image Processing 12.5
- SP545 Instrument and Interfacing Programming 12.5
- SP547 Instrument Electronics 12.5

Project unit
- SP535 Biomedical Project 12.5

The following subjects are available as alternatives for part of the course if sufficient demand exists.

Introductory unit
- SP553 Introduction to Instrumentation Electronics 12.5

Biomedical units
- SP563 Biophysics of Exercise 12.5
- SP537 Medical Imaging 12.5

Instrumentation units
- SP542 Optical Instrumentation 12.5
- SP544 Nuclear Instrumentation 12.5

Application procedure
See entry under 'General information'.

Z088 Graduate Diploma of Applied Science (Computer Science)

A one year full-time or two year part-time program for graduates who require a specialised and practical education in software development. The emphasis is on the acquisition of systems development skills in the UNIX environment.

To qualify a student must complete the seven subjects listed below. The full-time program normally requires attendance for sixteen hours per week for two semesters and the part-time evening program eight hours per week for four semesters.

Students who successfully complete the program with an average grade of distinction will be admitted directly to the one year Master of Information Technology program.

Entry to the Graduate Diploma of Applied Science (Computer Science) is open to applicants with a first tertiary qualification, preferably in engineering or science.

Course structure

<table>
<thead>
<tr>
<th>(1993 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ700 Programming in C</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ702 Systems Programming</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ703 Software Development Project (full year)</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ705 Database</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ710 Advanced C Programming</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ714 Systems Analysis and Software Engineering</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ727 Communications</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Application procedure
See entry under 'General information'.

Z085 Graduate Diploma of Applied Science (Industrial Chemistry/Biochemistry)

This course is designed for graduates with a general background in chemistry or biochemistry who wish to become experienced in its application to industrial problems.

The course will be offered on the basis of one year of full-time study, covering a full twelve months. It will comprise seventeen weeks of coursework related to industrial chemistry and twenty-two weeks of industry based learning including paid employment experience in an appropriate industrial laboratory. The program will include a small research project.

Graduates of the course will not only have gained a thorough understanding of the specialist principles of industrial chemistry, but also exposure to such related issues as process economics, industrial issues and governmental regulations.

Entry to industrial chemistry is open to applicants with a first tertiary qualification in medicine, engineering and biological sciences. An applicant whose position or experience indicates an ability to succeed in the course may be accepted with other qualifications or with less than the usual entry qualifications.

Course structure

<table>
<thead>
<tr>
<th>(1989 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>SC720 Applied Chemistry Techniques</td>
<td>12.5</td>
</tr>
<tr>
<td>SC721 Properties of Colloids &amp; Interfaces</td>
<td>12.5</td>
</tr>
<tr>
<td>SC723 Industrial Chemistry</td>
<td>12.5</td>
</tr>
<tr>
<td>SC725 Practical Chemistry</td>
<td>12.5</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>SC729 Industrial Microbiology</td>
<td>12.5</td>
</tr>
<tr>
<td>SC731 Practical Biochemistry</td>
<td>12.5</td>
</tr>
<tr>
<td>SC732 Practical Chemistry</td>
<td>12.5</td>
</tr>
<tr>
<td>SC760 Biochemistry</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Application procedure
See entry under 'General information'.

This course aims to extend the work load done in the Graduate Certificate of Applied Science (Health Statistics). This will include using a wider variety of statistical techniques, providing a deeper and broader understanding of the relevant software; developing critical skills in the statistical evaluation of health literature and gaining personal contact with the work of practitioners in the health sciences.

The Graduate Diploma will qualify graduates to take up research assistant positions involving both the management and application of research in the health sciences that require statistical methods for its design and analysis.
Graduate Diploma in Applied Science (Social Statistics)

This course is for people with similar backgrounds to those undertaking the Graduate Certificate of Applied Science (Social Statistics), but who want to progress further and cover a wider range of topics at a greater depth.

Normal entry is by successful completion of the subjects for the Graduate Certificate in Social Statistics. Other applicants with suitable backgrounds may be admitted to the program.

The class contact hours will normally be four hours per night, two nights per week for four semesters which includes the two semesters of the graduate certificate.

Classes will consist of a combination of lecture and practical work as applicable to the topic.

Course structure

The four subjects from the graduate certificate plus four subjects from:

- Demographic Techniques
- Survey Sampling
- Multivariate Statistics 1
- Statistical Modelling
- Multivariate Statistics 2
- Secondary Data Analysis
- Advanced Statistical Computing

Credit points

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM733</td>
<td>Demographic Techniques*</td>
<td>12.5</td>
</tr>
<tr>
<td>SM735</td>
<td>Survey Sampling</td>
<td>12.5</td>
</tr>
<tr>
<td>SM743</td>
<td>Multivariate Statistics 1*</td>
<td>12.5</td>
</tr>
<tr>
<td>SM744</td>
<td>Statistical Modelling</td>
<td>12.5</td>
</tr>
<tr>
<td>SM746</td>
<td>Multivariate Statistics 2</td>
<td>12.5</td>
</tr>
<tr>
<td>SM747</td>
<td>Secondary Data Analysis</td>
<td>12.5</td>
</tr>
<tr>
<td>SM752</td>
<td>Advanced Statistical Computing</td>
<td>12.5</td>
</tr>
</tbody>
</table>

* Compulsory subjects.

Note: 1. A maximum of two other approved subjects may be substituted for two of the subjects listed.
2. A maximum of two exemptions are permitted.
3. All the subjects will not necessarily be offered each year.

Application procedure

See entry under 'General information'.

Master of Applied Science by research

(In areas of applied chemistry, biochemistry, biophysics, instrumental science, computer science, mathematics, operations research, statistics and mathematics education)

Graduates at Bachelors degree level who have shown a high standard of academic achievement may be admitted to candidature for the degree of Master of Applied Science.

To be assessed for this degree, a candidate must present a major thesis based on original research, investigation or development work carried out either at Swinburne or externally. External work may be carried out at any approved industrial, governmental, educational or research organisation.

Copies of the statute for the degree of Master are at the end of this Handbook in the 'Procedures and Regulations' chapter and application forms are available from the Registrar's Office.

Master of Applied Science (Applied Colloid Science) — by coursework

The aims of this course are to provide students with an understanding of modern colloid science at an advanced level, to develop research capabilities and to introduce the latest technology to industry.

The course includes a research project which is normally undertaken throughout the second and third years of the course, and for which a minor thesis is submitted. This project may be carried out at the student's work place or within the Swinburne Colloid laboratory or at a similar institution.

The program is a three-year part-time course involving up to eight hours per week (two evenings). Each topic runs for five weeks (one evening per week), except the research project which is designed to occupy roughly one third of the student's total work load and is to be carried out at the student's discretion. Under special circumstances, the course may be offered on a full-time basis.

Students who successfully complete, with good results, the first year of the Graduate Diploma in Applied Colloid Science may progress to the second year of the Masters course.

Direct entry into the first year of the Masters course is available to applicants having a Swinburne degree with distinction in computer-aided chemistry or biochemistry or an honours degree in a related discipline. Equivalent experience will be considered.

Course structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC716</td>
<td>Basic Colloid Science</td>
</tr>
<tr>
<td>SC717</td>
<td>Basic Surface Science</td>
</tr>
<tr>
<td>SC733</td>
<td>Practical Techniques in Colloid Science</td>
</tr>
<tr>
<td>SC734</td>
<td>Practical Techniques in Surface Science</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC736</td>
<td>Research Skills, Part 1</td>
</tr>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
</tr>
<tr>
<td>SC757</td>
<td>Research Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC717</td>
<td>Basic Surface Science</td>
</tr>
<tr>
<td>SC733</td>
<td>Practical Techniques in Colloid Science</td>
</tr>
<tr>
<td>SC734</td>
<td>Practical Techniques in Surface Science</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC737</td>
<td>Research Skills, Part 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC757</td>
<td>Research Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC737</td>
<td>Research Skills, Part 2</td>
</tr>
</tbody>
</table>

Electives

The elective subjects are to be chosen from the following:

- SC739 Colloid Rheology | 12.5
- SC740 Chemistry of Surface Coatings | 12.5
- SC741 Physical Properties of Surface Coatings | 12.5
- SC742 Corrosion and Protection of Metals | 12.5
- SC743 Food Colloids | 12.5
- SC744 Chemistry of Surfactants | 12.5
- SC745 Solution Behaviour of Surfactants | 12.5
- SC746 Advanced DLVO Theory | 12.5
- SC747 Adsorption from Solution | 12.5
- SC748 Water Treatment Technology | 12.5
- SC749 Polymer Flocculation | 12.5
- SC750 Detergency | 12.5
- SC751 Emulsion Technology | 12.5
- SC752 Polymer Stabilisation Technology | 12.5
- SC753 Thin Films and Foams | 12.5
- SC754 Light Scattering and Concentrated Dispersions | 12.5
- SC755 Surface Chemistry of Clays and Coal | 12.5
- SC756 Mineral Processing | 12.5

These subjects will not all be offered in any one year. Their availability will be determined by student demand and the
list may be augmented to meet student's requirements. Students will be expected to complete six of the above electives.

Application procedure
See entry under 'General information'.

1090 Master of Information Technology

This course is offered in conjunction with the Faculty of Business.

The Master of Information Technology involves one year full-time or two years part-time study. Entry is open to graduates with either an honours degree in computer science, information technology, information systems or an equivalent. Entry is also open to holders of graduate diplomas in computer science, information technology, information systems or computer systems engineering. Candidates with three year degrees but substantial industry experience may also apply.

The course is designed to provide opportunities for in-depth studies in some areas of contemporary information technology. The course is based around the concept of a "cluster", and the subjects in each of the cluster; are listed below. Clusters are of three types:

- Discipline clusters, consisting of four units with a common theme.
- Complementary clusters, consisting of four units that complement the discipline cluster, previous experience and interests. Complementary cluster units may be chosen from other clusters, honours degree units or other suitable sources.
- Research and project/thesis clusters, consisting of a major piece of work in the area of the discipline cluster and submission of a thesis. If the area of study is software engineering or automated systems development this may be a major group project.

The course consists of completion of two "clusters" of study, one of which must be a discipline cluster. Currently, we offer four discipline clusters, in the areas of:

- software engineering
- automated systems development
- human-computer interaction
- intelligent systems engineering

The full-time program normally requires attendance for sixteen hours per week for two semesters and the part-time course for eight hours per week for four semesters.

Entry is open to applicants who have completed an honours degree or graduate diploma in computer science, information technology, computer systems engineering, information systems or some closely related field. Applicants with three year degrees with substantial industry experience may also be eligible.

Students progressing from a graduate diploma would normally be expected to have maintained a distinction level average over the course.

Course structure
(1993 syllabus)

<table>
<thead>
<tr>
<th>Clusters</th>
<th>Subject</th>
<th>Title</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>IT904</td>
<td>The Software Process</td>
<td>12.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>IT914</td>
<td>Systems Analysis</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>IT924</td>
<td>Object Oriented Design and Programming</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>IT934</td>
<td>Real Time Systems</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>IT944</td>
<td>Advanced Database Technology</td>
<td>12.5</td>
</tr>
<tr>
<td>Automated Systems</td>
<td>IT954</td>
<td>Information System Requirements</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Development IT964 Resources for Information
IT974 System Development 12.5
IT984 Automated Development Methods 12.5

Human-Computer Interaction IT906 Human-Computer Interaction 12.5
IT916 Programming the User Interface 4 12.5
IT926 Interactive Systems Development 12.5
IT996 HCI Project 12.5

Intelligent Systems Engineering IT919 Intelligent Systems Applications 12.5
IT929 Adaptive Intelligent Systems 12.5
IT999 ISE Project 12.5

Research/Project IT903 Software Engineering Project (for 2 semesters) 25.0
IT913 Automated Systems Development Project (for 2 semesters) 25.0
IT993 Research Project (for 2 semesters) 25.0

(IT903 and IT913 may only be chosen in conjunction with the appropriate cluster.)

Student demand and staff resources will determine the availability of subjects for study.

Application procedure
See entry under 'General information'.

Z093 Master of Applied Science (Biomedical Instrumentation)

The Master of Applied Science (Biomedical Instrumentation) normally involves three years of part-time or one-and-a-half years of full-time study.

This course offers training in instrumentation and quantitative techniques coupled with a study of the physiological processes being monitored. It provides a detailed study of the design, construction, operation and commercial production of a wide range of biomedical and general laboratory instrumentation.

The course also emphasises innovative techniques of instrumentation and the skills required for the commercial development of these techniques.

Course structure

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>Introductory</td>
<td></td>
</tr>
<tr>
<td>SP555</td>
<td>Introduction to Biophysical Systems 12.5</td>
</tr>
<tr>
<td>Advanced</td>
<td></td>
</tr>
<tr>
<td>SP531</td>
<td>Biophysical Systems and Techniques 12.5</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>SP532</td>
<td>Clinical Monitoring Techniques 12.5</td>
</tr>
<tr>
<td>SP547</td>
<td>Instrument Electronics 12.5</td>
</tr>
<tr>
<td>Semester 3</td>
<td></td>
</tr>
<tr>
<td>SP534</td>
<td>Neurophysiological Techniques 12.5</td>
</tr>
<tr>
<td>SP545</td>
<td>Instrument Programming and Interfacing 12.5</td>
</tr>
<tr>
<td>Semester 4</td>
<td></td>
</tr>
<tr>
<td>SP541</td>
<td>Signal and Image Processing 12.5</td>
</tr>
<tr>
<td>SP537</td>
<td>Medical Imaging 12.5</td>
</tr>
</tbody>
</table>
Z096 Master of Applied Science (Social Statistics)

This is a seven semester part-time program consisting of twelve subjects, and a minor thesis. This course is for people with similar backgrounds to those undertaking the Graduate Diploma (Social Statistics), but who want to make an in-depth study of the area and gain research skills. Normal entry is by an approved four-year degree plus successful completion of the graduate diploma with at least two distinctions in the second year. Other applicants with suitable backgrounds (such as relevant academic and work experience) may be considered for admission to the masters program.

Course structure

Ten subjects from those offered in the Graduate Diploma of Applied Science (Social Statistics), plus research work. This consists of three research subjects, (listed below), in which students have the opportunity to apply the knowledge and skills developed earlier in the course to a research project. It is preferred that the problem be employer based and have direct relevance to the student’s employment.

Credit points

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM745</td>
<td>Project Planning</td>
<td>12.5</td>
</tr>
<tr>
<td>SM748</td>
<td>Research Methodology</td>
<td>12.5</td>
</tr>
<tr>
<td>SM749</td>
<td>Minor Thesis</td>
<td>25.0</td>
</tr>
</tbody>
</table>

Application procedure

See entry under ‘General information’.

Z001 Doctor of Philosophy

Programs are offered in areas of applied chemistry, biochemistry, biophysics, instrumental science, computer science, mathematics, operational research, statistics, mathematical modelling and mathematics education.

Applicants who are graduates at Bachelor’s or Masters degree level and who have shown a high standard of academic achievement may be admitted to candidature for the degree of PhD. Applicants shall have demonstrated to the Higher Degrees Committee of the Academic Board a capacity for research and investigational work in the area of study proposed.

To be assessed for this degree, a candidate must present a major thesis based on original research, investigation or development work carried out either at Swinburne or externally. External work may be carried out at any approved industrial, governmental, educational or research organisation.

Copies of the statute for the degree of PhD are at the end of this Handbook in the ‘ Procedures and Regulations’ chapter or are available from the Office of Research and Graduate Studies.
Subject details

AB200  Knowledge Thought and Computers  
10.0 credit points  
No. of hours per week: three hours  
An optional non-computing subject available to students of the Bachelor of Information Technology degree.

Subject aims
The subject aims to develop skills in critical and creative thinking, and to develop an understanding of the conceptual and ethical aspects of advanced computer technology, including the ways in which computers are transforming our conception of ourselves and our relationship to the environment.

Subject description
Reasoning and argument, philosophical logic, logic and language. Traditional and contemporary theories of knowledge and their relevance to knowledge engineering. Mind and machines: computation as a model for thinking about (human) thinking — and vice versa. Ethical questions arising from the above. Enquiries about this subject should be directed to the Faculty of Arts.

AB310  Behavioural Studies and Communication  
5.0 credit points  
No. of hours per week: two hours  
A second-year subject of the degree course in environmental health.

Subject description
The course examines Australian society from the point of view of the self, the primary group, the formal organisation and the institution. It uses sociological concepts to examine the behaviour of people in groups and society at large, and psychological concepts to examine personality and the way in which the individual initiates action or responds to others. These concepts provide the theoretical basis for an understanding of the practical processes involved in industrial relations including negotiation, conciliation, handling conflict and hostility at an organisational level, etc.

AB2100  Behavioural Studies and Communication  
5.0 credit points  
No. of hours per week: two hours  
A first-year subject of the degree course in environmental health.

Subject description
The emphasis in this course will be on interpersonal communication/skills and stress management. Topics in communication will include: non-verbal and verbal communication, one-to-one communication skills, coping with conflict at an interpersonal level, personality influences in communication and psychological aspects of communication. Topics in stress management will include: principles of behavioural psychology, relaxation, nutrition and mental health.

BC110  Accounting  
Please see Faculty of Business subject details for further information.

BS141  Introductory Law  
5.0 credit points  
No. of hours per week: two hours  
A first-year subject of the degree course in environmental health.

Subject description
Sources of law, problems with the law, the tiers of Australian Government: Commonwealth, State, Local Government. The Parliamentary Process. Constitutional constraints affecting environmental and public health legislation. Delegated legislation: (a) relevance to environmental health officers, (b) advantages and disadvantages, (c) reviewing through Parliament and the courts. The Australian court system, court personnel and tribunals with specialised jurisdictions. The civil and criminal trial process. Judges as a source of law — precedent and legal reasoning. Case studies of particular relevance will be examined: negligence (consumer protection); nuisance (environmental controls); and strict liability (hazardous materials). Judges as a source of law — the main judicial approaches to statutory interpretation (plain meaning or policy), the context of words in a statute, the audience, the purpose. Particular rules; meanings limited to class or association, gaps in a statute, inconsistent provisions, conflict with property rights, penal provisions.

BS428  Administration and Management  
4.0 credit points  
No. of hours per week: two hours  
A fourth-year subject of the degree course in environmental health.

Subject description
Introduction to management techniques with particular references to Government agencies. Study of the environmental health officer’s role within structured frameworks of Government agencies. Consideration of financial and resource management with particular reference to Government agencies. Data processing, information management, use of statistics and other administrative processes. Overview of practices and procedures necessary to support the occupational framework of environmental health officers.

BS447  Administrative Law  
5.0 credit points  
No. of hours per week: two hours  
A fourth-year subject of the degree course in environmental health.

Subject description
To consider efficient internal administrative procedures to ensure against liability for negligent advice. Regulatory controls — Commonwealth Impact Statements, State Environment Effects Statements, Planning Effect Statements, Health Impact Statements. The role of the Ombudsman and Committees of Enquiry. The Administrative Law Act and review by courts and tribunals of the administrative process, the application of the rules of natural justice, notice and fair hearing, the duty to give reasons, impartiality and bias.
Challenging decisions made:
(1) in excess of statutory powers,
(2) unreasonably, or
(3) for improper purpose or bad faith.
The Freedom of Information Act and its interpretation by the courts.
Changing the law, and involvement by environmental health officers in changes to building controls, role and structure of local government, and food laws.

BS513 Business Studies — Accounting
7.5 credit points
No. of hours per week: three hours
A first-year subject of the degree courses in computer science, and mathematics and computer science.

Subject description
The purpose of this course is to provide students with a workable knowledge of the accounting principles and concepts, with an understanding of how accounting information is reported and used in decision-making.
On completion of this subject the students should be able to:
- Outline the major internal and external users of accounting information.
- Explain how accounting information may be used to assist in making business decisions.
- Be able to prepare accounting reports — balance sheet, and profit and loss statements.
- Prepare a bank reconciliation statement and understand its role in cash control.
- Prepare a cash budget and cash flow statement.
- Select and use financial ratios to analyse the profitability and financial stability of a business entity.

Textbook

BS5619 Business and Management
8.0 credit points
No. of hours per week: four hours
A fourth-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Business administration, business communications and industrial relations. Industrial motivation and job satisfaction. Leadership in organisations.
The business environment — the effects of social, legal, economic, political and technological factors. Industrial innovation.
Financial decision making — cost factors, sales forecasts, profitability, potential return on investment and associated risks, capital investment planning, budgeting.
The function of research and development in the chemical and biochemical industries.
Safety and legal liability (towards oneself and others) in the chemical and biochemical industries.

BS526 Behaviour in Organisations
5.0 credit points
No. of hours per week: three hours
Assessment: tests and assignments
An optional fourth-year subject for students majoring in computing.

Subject description
The objectives of the subject are to enable students to:
(a) understand the nature and importance of human resources as an organisational asset;
(b) obtain a better understanding of themselves, their impact on other people and the way other people influence their own behaviour;
(c) explore the implications of both work groups and informal groups in organisations;
(d) consider the impact of alternative organisation designs on organisational effectiveness;
and
(e) understand the role of managers and the impact of alternative managerial style on organisational effectiveness.

BS5721 Business and Management
20.0 credit points
No. of hours per week: four hours
A subject in the Graduate Diploma in Industrial Chemistry. See BS519 for details.

BS5250 Environmental Health Law
10.0 credit points
No. of hours per week: four hours
A second-year subject of the degree course in environmental health.

Subject description
Legislation relevant to the environmental health officer in local government: the Health Act, enabling legal provisions, e.g. nuisance, infectious disease, building, accommodation, incidental controls.
The Food Act — controls on food premises, preparation and sale of food, etc. Warranties, third party procedure, defence of reasonable precautions. Provisions with respect to prosecution.
Incidental powers and controls by virtue of the Local Government Act will also be considered.
Legislation relevant to the environmental health officer in state government authorities.
Health Department — in addition to the Health Act and the Food Act, further relevant legislation with respect to drugs and health services will be considered.
Environment Protection Authority. Consideration of the Environment Protection Act. state environment protection policies and regulations thereunder.
Relevant judgements on the application/interpretation of the legislation will be studied.

BS5254 Legal Procedure and Evidence
10.0 credit points
No. of hours per week: four hours
A second year subject of the degree course in environmental health.

Subject description
The legal process of prosecution — choosing the appropriate court, who may prosecute, the rule against ambiguous allegations, what must be specified in the information and summons, rules with respect to service and proof of same. Time limits. Adjournment.
The civil and criminal trial process. Differences in trial procedures for summary and indictable offences. Plea, examination of witnesses, powers of the court.
The rules of evidence; statutory and judicial developments, the burden and standards of proof, hearsay, documents, admissions, improperly obtained evidence, competent and compellable witnesses, expert witnesses, judicial notice and other relevant evidentiary issues will be considered.

In the context of the mock trials, which will commence from the initial interview of a complainant, particular problems relating to both procedure and evidence, sampling and entry powers will be considered.

Particular problems caused by the concept of legal personality when prosecuting the corporate defendant and whether criminal sanctions are appropriate will be examined.

CE560 Environmental Engineering and Planning

12.0 credit points
No. of hours per week: six hours

A fourth-year subject of the degree course in environmental health.

Subject description


Structure and process of planning in Victoria including neighbourhood and regional planning. Planning scheme surveys including environmental impact assessments.

IT101 Computer Fundamentals

10.0 credit points
No. of hours per week: four hours

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
An understanding of the principles of operation of computer hardware and software.
To study the way in which information is represented in computers.
To introduce the skills required to use both micro and mainframe operating environments.

Subject description
History of computing: early computing devices, dawn of the modern computer, generations of computers.

Data representation: data versus information, number systems, representation of numbers and alphanumeric data, integer arithmetic.

Introduction to operating systems: data management, time sharing, batch and on-line systems, introduction to DOS and Windows.

Programming concepts: compilers, translators, and assemblers. Appropriate and inappropriate computer applications.

Programming environment: using micro and mainframe operating systems; file management, utilities, editors, compilers, command procedures, introduction to JCL.

IT102 Introduction to Programming

10.0 credit points
No. of hours per week: four hours
Assessment: examination and assignment

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
To introduce students to programming in the language C, using modern structured programming techniques.

Subject description
The software lifecycle, specifications, algorithm approach to problem solving, program design methodology, data types, control of flow, arrays, functions, string handling with standard libraries, data structures and data types, file I/O with the standard libraries, common algorithms — sorting and searching, pre-processor commands.

Textbooks
To be advised

IT103 Business Applications & Systems 1

10.0 credit points
No. of hours per week: four hours

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
The aims of this unit are to:

Introduce students to the component parts of common business systems such as inventory, accounts receivable and accounts payable.
Give students skills in using personal computers particularly in productivity tools such as word processing, spreadsheets and graphics.

Examine the use of computers in accounting information systems, other transaction processing systems, management information systems, decision support systems and office information systems.

Subject description
Introduction to: information systems and accounting: the role of computers in information systems. Introduction to the personal computer, word processing, spreadsheets — LOTUS 123.

System components: a system — identification of components. Files: classification, recording, updating, documenting systems.

Accounting systems: Integrity Accounting package, inventory, accounts receivable, accounts payable.

Reporting to managerial decision makers: concepts of management information systems and decision support systems.

Microcomputer systems: introduction to business support systems; spreadsheets, dBase etc. Report generators.


Case study presentations.
IT105  Behaviour and Communications in Organisations
10.0 credit points
No. of hours per week: four hours
Assessment: oral presentations, research project

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
To provide students with:
(a) an understanding of the nature and importance of communication, interpersonal skills and group development to organisational management;
(b) to develop students' interpersonal skills and skills as team members;
(c) to allow students to experiment with various techniques, theories and approaches to communications and management through the use of experiential teaching techniques;
(d) to prepare students to appreciate the context of work and their own roles as organisation members;
(e) to provide a foundation for subsequent studies.

Subject description
Communication perception, oral presentations, assertiveness skills, negotiation skills, conflict management, and research skills.

IT122  Mathematics
10.0 credit points
No. of hours per week: four hours
Prerequisites: nil
Assessment: assignment and examination

An elective subject of the Bachelor of Information Technology.

Subject description
Vectors and matrices; manipulation of vectors, linear combination of vectors, linear independence and basis, matrix manipulation, inverse of a matrix, matrix solution of equations.
Markov process, definition of stochastic systems, transient and steady systems, first time package.
Queueing theory; classification of queueing systems, basic queueing models, other queueing models.
Simulation; introduction to random number generators, simulation techniques and some applications.
Forecasting; definitions, requirements, time series forecasting, moving averages, exponential smoothing and their applications.
Decision theory; classification of decision problems; decision trees and related topics.

Multicriteria  decision models.

IT201  Decision Analysis
10.0 credit points
No. of hours per week: four hours

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
To familiarise students with a range of statistical, financial and modelling methods commonly used in the decision support area. The application of techniques to solve business problems and to present the results using software packages such as LOTUS, MINITAB, Harvard Presentation Graphics etc. is emphasised.

Subject description
An introduction to modelling concepts.
Basic statistical ideas such as probability and the combination of probabilities, probability distributions and their applications, statistical measures (mean, variance), introductory time series analysis, linear regression, introduction to simulation.
Statistical applications through the use of sources of data, data collection and manipulation with packages such as MINITAB.
Financial analysis: the concept of interest, present value methods, discounted cash flow, internal rates of return.
Throughout the course analysis and graphical presentations by using packages such as LOTUS is emphasised.

IT202  COBOL Programming
10.0 credit points
No. of hours per week: four hours
Prerequisite: IT102 Introductory Programming

A first-year subject of the Bachelor of Information Technology degree.

Subject aims
To train students to be able to:
- read, understand, modify and debug COBOL programs;
- design, write, test and document attractive well-structured programs in COBOL, using the main features of 1985 ANSI COBOL.

Subject description
COBOL fundamentals: COBOL structure, syntax, examples, simple vocabulary (PERFORM, MOVE, ACCEPT, DISPLAY, etc.). Sequential files: review file concepts, tape/disk, file verbs. Arithmetic: ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE. Moves: numeric, alphanumeric, group, MOVE CORRESPONDING.
Data validation: IF/ELSE, nested IFs, evaluate sign & class tests, range & limit tests, compound statements, 88 levels.
Control group reporting: PERFORM v F group processing, group totals, group indication, group headings, summary reports.
Testing and debugging: testing strategies, test data, design. Indexed files: physical description of indexed files, VSAM v ISAM, random v sequential access, environment/data division entries, verbs.
Tables: REDEFINES, review table concepts, one-dimension tables, two-dimension tables, PERFORM VARYING, binary search, SEARCH, SEARCH ALL.
Multiple file processing: merges, merge/replace, master file update.
String processing: INSPECT, STRING, UNSTRING.
Sorts: sort, merge, work file, key fields, SORT verb, input procedure, output procedure.
Sub-programs: program design and development, modular design, cohesion, coupling.
Subject aims
To train students to:
- develop a simple business application using a micro-computer package;
- specify the data inputs, file contents and information requirements for common production systems such as job cost and bill of materials;
- specify data that needs to be used to integrate common business applications and to be able to achieve this on the computer;
- explain how systems are justified, developed, implemented and maintained.

Subject description
Data base management concepts: file concepts, reporting tool (DBase III).
Systems development concepts: packages vs. Bespoke, systems life cycle, prototyping, professional development vs. user development.
Internal controls: developing effective internal controls and audit trails.
Justification and selection of systems.
Production systems: job cost, bill of materials.
Systems implementation, operation and maintenance.
Types of application systems: transaction — general purpose and vertical market, decision support and expert systems — examination of the necessary hardware, software and people resources required.
Data transportability: micro-mainframe links, PC to PC links, systems integration — including general ledger, integrated software.
Case study presentations.

IT222 Mathematics
10.0 credit points
No. of hours per week: four hours
Prerequisites: nil
Assessment: assignment and examination

An elective subject of the Bachelor of Information Technology.

Subject description
Vectors and matrices; manipulation of vectors, linear combination of vectors, linear independence and basis, matrix manipulation, inverse of a matrix, matrix solution of equations.
Markov process, definition of stochastic systems, transient and steady systems, first time package.
Queueing theory; classification of queueing systems, basic queueing models, other queueing models.
Simulation; introduction to random number generators, simulation techniques and some applications.
Forecasting; definitions, requirements, time series forecasting, moving averages, exponential smoothing and their applications.
Decision theory; classification of decision problems; decision trees and related topics.
Multi-criteria decision models.

IT301 Systems Software I
16.5 credit points
No. of hours per week: twenty-seven hours for three weeks
Prerequisites: successful completion of the segments one and two
A first-year summer term subject of the Bachelor of Information Technology degree.

Subject aims
To develop an understanding of the fundamental principles of operating systems so as to promote a more efficient use of the resources provided in the computing environment, and to prepare for more in-depth studies in later systems software units.
To develop an understanding of how these principles apply to a specific general purpose operating system such as IBM’s MVS.

Subject description
Operating system principles: introduction, operating system services, file systems, process scheduling, memory management, virtual memory, storage system scheduling, deadlocks, job and task management, protection.
The main components of IBM’s MVS, including the job entry subsystem, the supervisor, data facility product, virtual store.
Job control language is also practically covered.

IT302 Organisation Behaviour (OB)
17.0 credit points
No. of hours per week: twenty-one hours for three weeks
Instruction: an experiential model of learning is utilised supported by appropriate reading

A first-year summer term subject of the Bachelor of Information Technology degree.

Subject aim
The broad aim is to enable students to learn how to apply the theory and skills of organisation behaviour and to transfer that learning into information systems contexts.

Subject objectives are:
- to enable students to develop a perspective which demonstrates the place of IS departments in the total organisation
- to give an understanding of themselves, their impact on others and of the way others influence their behaviour
- to allow students to experience the satisfactions and difficulties inherent in working in groups
- to learn behavioural skills applicable to IS environments
- to be able to analyse and provide solutions for people/technology problems
- to enable students to make sense of interdepartmental relations and suggest some ways of overcoming intergroup conflict
- to apply OB knowledge to and further learn from industry based learning experiences.

Subject description
Organisational socialisation; theories of managing people; motivation; personal growth; career development; group dynamics and team performance; managing multigroup work; leadership; organisation culture and change; power and influence; performance appraisal; managing presentations.

IT303 Data Base Management Systems I
16.5 credit points
No. of hour; per week: twenty-seven hours for three weeks
Prerequisites: IT202 COBOL Programming and IT203 Business Applications and Systems 2

A first-year summer term subject of the Bachelor of Information Technology degree.

Subject aims
To equip students with practical and theoretical knowledge of database management systems so that they can work productively on database applications (specifically relational databases).
Subject description
Introduction: advantages and functions of database management systems. The relational data model. Data definition and manipulation. Structured query language, advanced SQL.
Embedded SQL: embedding SQL in a third generation language (COBOL).
OLTP systems: using SQL in an online transaction environment. DBMS transaction and lock management.
Data integrity, recovery and concurrency management.
Comparisons between major commercial DBMSs.
Practical work involving the creation, loading and manipulation of relational databases in batch and online environments will be the focus of laboratory work. Particular emphasis is placed upon popular DBMS software that the students are likely to encounter in their industry based learning segments.

IT322 Mathematics
10.0 credit points
An elective subject of the Bachelor of Information Technology degree.

Subject description
Quality control concepts and applications to manufacture. Logistics. Systems and location problems. Vehicle scheduling and control, or relevant subjects from the mathematics major.

IT401 Industry Based Learning
50.0 credit points
Twenty weeks full-time project work in industry
Prerequisite: satisfactory completion of the subjects of the first three segments
A second-year subject of the Bachelor of Information Technology degree.

Subject aims
To gain first hand experience of the operation of the information technology environment, the work of data processing departments and the workings of organisations.
To extend the learning of the preceding segments of the course, in particular to gain experience of programming, systems software and the information technology environment of business and industry.
To address issues which can better be learned from within the industrial environment such as user liaison and systems security.

Subject description
Students work under the supervision of both the industrial sponsor and the student manager.
Projects and assignments and participation in the professional activities of sponsors data processing and information technology environments are assessed by student manager and industry supervisor.
Students are expected to gain experience in the following areas: programming, systems design, user liaison, and security and to be closely involved with the application of at least two of the following: data base communications, user support, and systems software.

IT501 Systems and Information Analysis 1
10.0 credit points
No. of hours per week: four hours
Prerequisite: IT303 Data Base Management Systems 1
A second-year subject of the Bachelor of Information Technology degree.

Subject aims
This unit provides students with the skills necessary to perform information analysis and data modelling for detailed applications as well as at the corporate level.

Students make extensive use of appropriate software tools to help them develop detailed requirements specifications.

By the end of the unit students should be able to:
1. Prepare a requirements specification for a small application, to be used for preparation of a structured design specification.
2. Analyse corporate information requirements and hence contribute to the preparation of a strategic data model for an organisation.
3. Select the systems analysis approach appropriate to a particular situation from a range of modelling techniques and tools.

Subject description
Systems requirements, data and models.
Data analysis — user views of data; data dictionaries. structured systems analysis — data flow diagrams; structured design software; transforms.
Corporate information systems — corporate data modelling; data administration; levels; planning, control, operational; scope; corporate, divisional, local.

IT502 Systems Software 2
10.0 credit points
No. of hours per week: four hours
Prerequisite: IT301 Systems Software 1
An optional second-year subject of the Bachelor of Information Technology degree.

Subject aims
To make an in-depth study of a mainframe operating system such as MVS or VM. The architecture of the mainframe as well as the assembler language is studied so as to examine the inter-relationship between systems software and the computer's architecture. The role of the systems programmer as distinct from the applications programmer is considered.

Subject description
Assembler programming: introductory concepts, instruction formats, decimal instructions, data transfer and sequence control, edit instructions, binary data and instructions, address modification and arrays, bit and byte manipulations, input/output macros, subroutines and linkages.
Systems programming: testing and debugging with assembler languages, style, documentation of systems software, problem determination (dump reading), systems utilities, file systems (VSAM/AAMS), system generation, system maintenance, recovery and termination management, security.

Computer architecture: CPU and ALU principles of operation, divisions of storage, addressing mechanisms, storage boundaries, operation and interfacing of input/output devices.

IT503 Data Base Management Systems 2
10.0 credit points
No. of hours per week: four hours
Prerequisite: IT303 Data Base Management Systems 1
A second-year subject of the Bachelor of Information Technology degree.
Subject aims
To develop an understanding of the basic problems which are encountered in the development and maintenance of computer software and the current tools and techniques which are used by industry to overcome these problems. This subject complements IT501 Systems and Information Analysis 1 by concentrating on the latter stage of the software life cycle, particularly design. Students develop management and design documentation and experience working as a member of a software project team.

Subject description
The software life cycle: human factors, planning tasks, resource allocation, structural design, object-oriented design, interface design and evaluation, implementation, testing and maintenance.

IT504 Data Communications 1
10.0 credit points
No. of hours per week: four hours
A third-year subject of the Bachelor of Information Technology degree.

Subject aims
To introduce the fundamental concepts and components involved in data communications and to develop an understanding of communication protocols and computer networks. To familiarise students with various technologies used in the electronic office.

Subject description

IT509 Software Engineering 1
10.0 credit points
No. of hours per week: four hours
A second-year subject of the Bachelor of Information Technology degree.

Subject aims
To develop an understanding of the basic problems which are encountered in the development and maintenance of computer software and the current tools and techniques which are used by industry to overcome these problems. Logical design concepts expanded by a formal study of relational theory and normalisation enable students to understand developments in the field. Implementation and physical design skills are enhanced by an examination of the factors affecting performance.

Subject description
Relational theory/normalisation.
Design methodologies.
Factors affecting performance.
Analysis of transactions and transaction volumes.
Data base sizing.
Physical design.
Maintenance and creation of data bases.

IT601 Systems and Information Analysis 2
10.0 credit points
No. of hours per week: four hours
Prerequisite: IT501 Systems and Information Analysis 1
A third-year subject of the Bachelor of Information Technology degree.

Subject aims
This unit will build on the technical knowledge gained in earlier units and provide students with an understanding of the various ways in which the total corporate computing environment can be designed to meet corporate information needs and support corporate goals.

At the end of the course the student will be able to:
- understand the way that managers think and work and the need for computer systems to improve their effectiveness in decision making;
- justify the need for careful analysis, risk assessment and control procedures suitable for different systems development approaches;
- describe the methodologies in use in organisations and to determine the correct development approach for different systems;
- understand the need for different approaches to computer systems development to ensure that corporate information needs are met and computing productivity is maximised.

Subject description
Information systems theory — information needs of management, impact of information systems on strategic corporate plans.

Traditional life cycle development.

Problems with traditional life cycle development.

User driven computing — elimination of the functions of user and analyst, user abilities, quality assurance, private systems; resource requirements — hardware, software and support structures.

Life cycle variations — methodology and scope, variations in roles, controls framework.

Management issues — management of maintenance, risk assessment and control review, security and privacy, human resource planning, use and misuse of methodologies.

IT603 Data Base Management Systems 3
10.0 credit points
No. of hours per week: four hours
An optional third-year subject of the Bachelor of Information Technology degree.

Subject description
This unit completes the study of database management systems of units DBMS 1 & 2. The topics studied in this unit are:
- database recovery
- database integrity
- concurrency
- database security
- distributed databases
- special purpose database machines.
Subject aims
To introduce students to selected technologies which are deemed to be of emerging significance.

Subject description
A detailed treatment of selected technologies determined on a year-to-year basis, as a result of consultation with sponsor organisations.

IT804 Computing and the Human Context
10.0 credit points
No. of hours per week: six contact hours for six weeks or equivalent. (Note: The subject may be delivered in intensive seminar style)
Prerequisite: satisfactory completion of segments one to seven

A subject of the final summer semester of the Bachelor of Information Technology degree.

Subject aims
To guide students to analyse the effects of computers in society.
To formulate and justify opinions on pertinent social issues.

Subject description
A selection from:
- Social implications of computer applications in an information society.
- Impacts of information technology on workplace and organisations.
- Human issues: effects of standardisation.
- The nature of values, leisure and technology.
- Social issues within the computer industry.
- Professionalism, codes of conduct, codes of practice.
- The copyrights of software and hardware.
- Surveys about computers, technological change and forecasting.
- Privacy and security issues.
- Computer crimes and fraud.
- Societal issues and perspectives.
- Information systems in economic development.
- Goals in computer usage, motivating forces, computers in developing countries.
- Computers and the arts.
- Mind and machines.
- User liaison strategies.

IT701 Industry Based Learning 2
50.0 credit points
Twenty weeks full-time project work in industry
Prerequisite: satisfactory completion of the first six segments of the course

A third-year subject of the Bachelor of Information Technology degree.

Subject aims
To gain first hand experience of the operation of the information technology environment, the work of data processing departments and the workings of organisations.
To extend the learning of the preceding segments of the course, in particular the specialist studies undertaken.
To address issues which can better be learned from within the industrial environment and to gain an understanding of the relationship between the information technology environment and the total organisational environment.

Subject description
Students will work as members of the data processing and information technology environments to which they are assigned. Students will work under the supervision of both an industrial manager and a student manager.
Students will be expected to extend on their academic studies and gain further experience in the general areas of programming, systems design, user liaison and security, and to be closely involved with the application of at least four of the following in their two periods of industry based learning: data base, communications, user support, systems software, 4GL’s, expert systems.

IT609 Software Engineering 2
10.0 credit points
No. of hours per week: four hours
Prerequisite: Software Engineering 1

A third-year subject of the Bachelor of Information Technology degree.

Subject aims
This unit aims to develop in more detail some of the basic notions of the software life cycle as studied in IT509 Software Engineering 1.
A greater emphasis will be placed upon techniques for managing and improving the process of large-scale software development. Students should be able to apply their understanding to the development of modern software systems and become fully participating members of software project teams.

Subject description
Software standards, software cost and schedule estimation, software risk management, software configuration management, software quality management, software metrics. Group project.

IT803 Emerging Information Technologies
25.0 credit points
No. of hours per week: six contact hours for six weeks or equivalent. (Note: The subject may be delivered in intensive seminar style)
Prerequisite: satisfactory completion of segments one to seven

A subject of the final summer semester of the Bachelor of Information Technology degree.

Subject aims
To introduce students to selected technologies which are deemed to be of emerging significance.
To study process management activities necessary to the successful engineering of large-scale software systems.

**Subject aims**

To study process management activities necessary to the successful engineering of large-scale software systems.

**Subject description**

Software standards; schedule and cost estimation; risk management; software quality management, software metrics; software configuration management; software process assessment.

**Textbooks**

To be advised

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**IT906 Human-Computer Interaction (HCI)**

12.5 credit points

No. of hours per week: two hours

Instruction: combination of lectures, seminars and laboratory sessions

Assessment: two assignments and a final examination

A unit of the human-computer interaction cluster of the Master of Information Technology.

**Subject aims**

To appreciate the need for, and the role and characteristics of, human-computer interaction.

**Subject description**

Introduction — points of view, scope and objectives of HCI, metamodels of HCI; HCI technology — human-machine fit and adaptation, the user interface usability and its components, input/output devices, interface objects, dialogue styles, genre, architecture, enhanced/adaptive interaction; HCI theory: modelling — psychological foundations of user interfaces, types of uses, human information processing, language, communication and interaction, formal models, cognitive models, social models, ergonomic models, applications; HCI research methods — experiments and experimental design, measurement in the behavioural sciences, data collection methods, data analysis methods; HCI application: organisational impact; HCI future developments.

**Textbooks**

To be advised

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**IT909 Foundations of Intelligent Systems**

12.5 credit points

No. of hours per week: two hours

Instruction: combination of lectures, tutorials and laboratory sessions

Assessment: assignments and a final examination

A unit of the intelligent systems engineering cluster of the Master of Information Technology.

**Subject aims**

To investigate knowledge and its representation within a computer.

**Subject description**

Selected topics from: knowledge and scepticism, intention and belief, behaviourism, scientific explanation, causality, the mind-body problem; logic — propositional logic, predicate logic, fuzzy logic, multi-valued logic, temporal logic, epistemic logic, procedural reasoning systems; implementation and interface issues — search and control, knowledge representation schemes, vision, natural language processing, learning; neural computing, connectionism and the mind.

**Textbooks**

To be advised

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**IT913 Automated Systems Development Project**

50.0 credit points

No. of hours per week: four hours for two semesters

Instruction: laboratory and field work, supplemented by supervised reading and individual consultation as required

Assessment: by deliverable items (requirements and specification documents, system and user manuals, the working system itself, and an evaluation of its effectiveness in satisfying the requirements)

A unit in the research/project cluster of the Master of Information Technology.

**Subject aims**

To gain experience of the automated systems development process; to develop an information system.

**Subject description**

The project may be undertaken either individually or as part of a small group where appropriate. All stages of the development process will be covered, culminating in the production of a working system.

**Textbooks**

To be advised

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**IT914 Systems Analysis**

12.5 credit points

No. of hours per week: two hours

Instruction: a combination of lectures and tutorials

Assessment: individual and team assignments, and a final examination

A unit in the Software Engineering cluster of the Master of Information Technology.

**Subject aims**

To study existing practice and contemporary developments in strategic systems planning, systems analysis methodologies, computer-assisted software engineering support for analysis, and contemporary issues in systems analysis.

**Subject description**

Strategic planning: a "systems" approach; system analysis: an object-oriented approach; CASE tool support; current issues: a selection of present research topics in "systems thinking" and object-oriented analysis.

**Textbooks**

To be advised

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**IT916 Programming the User Interface**

12.5 credit points

No. of hours per week: two hours

Instruction: a combination of lectures, seminars and laboratory sessions

Assessment: two assignments and a final examination

A unit of the human-computer interaction cluster of the Master of Information Technology.

**Subject aims**

To introduce the concepts and techniques relevant to programming the user interface.
**Subject description**
Concepts — independence (application, device, user); programming — menus, command-based systems, data input, giving information back to the user; screen techniques, using colour, direct manipulation systems and environments, event based programming, Windows and UNIX, help systems, handling and avoiding errors; tools — UNIX, PC and Macintosh platforms, function libraries, special purpose programming languages, interactive editors, application specific user interface programming languages, user interface management systems.

**Textbooks**
To be advised

**IT926 Interactive Systems Development**
12.5 credit points
No. of hours per week: two hours
Instruction: a combination of lectures, seminars and laboratory sessions
Assessment: two assignments and a final examination

A unit of the human-computer interaction (HCI) cluster of the Master of Information Technology.

**Subject aims**
To introduce students to the concepts and methodologies relevant to the systematic analysis and design of interactive technology.

**Subject description**
The role of HCI in systems development; HCI and systems methodologies; approaches to user involvement in development; task-requirements analysis; principles, guidelines, standards and rules; specification techniques: formal methods in HCI; design — prototyping, wizard of Oz, storyboarding, animation and video, rapid prototype implementation; implementation — fundamental concepts (independence, reusability), interaction libraries, dialogue control structure models; evaluation techniques — empirical evaluation, predictive modelling; user interface management systems; user guidance integrated into user interfaces.

**Textbooks**
To be advised

**IT929 Adaptive Intelligent Systems**
12.5 credit points
No. of hours per week: two hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: two assignments and a final examination

A unit of the Intelligent Systems Engineering cluster of the Master of Information Technology.

**Subject aims**
To provide an appreciation of the general concerns and approaches in research into the development of machine learning systems; to investigate various topics and methodologies from both the symbolic and connectionist paradigms; to give students practical experience with artificial neural network development; to investigate hybrid systems as a means of overcoming some of the limitations of expert system technology.

**Subject description**
A general framework — why develop learning systems? Categories of learning, the physical symbol system hypothesis; a symbolic stream consisting of such topics as classification and conceptual clustering, generalisation and discrimination, learning about control and metaknowledge, chunking, discovery; a connectionist (neural network) stream consisting of such topics as back propagation, competitive learning, counter propagation, "behaviourally" derived units, Boltzmann machines: genetic algorithms and classifier systems; hybrid systems — interactions between neural nets and expert systems, deriving rules from neural nets, integrated systems.

**Textbooks**
To be advised
IT934  Real Time Systems  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures and tutorials  
Assessment: individual essay, individual programming assignment, team maintenance exercise, and a final examination  
A unit in the software engineering cluster of the Master of Information Technology.  

Subject aims  
To study contemporary developments in real-time software and systems.  

Subject description  
Models of concurrent programming: real-time programming: programming distributed systems: development methodologies.  

Textbooks  
To be advised

IT944  Advanced Database Technology  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and laboratory work  
Assessment: assignments and a final examination  
A unit in the software engineering cluster of the Master of Information Technology.  

Subject aims  
To provide an understanding, through theory and practice, of some advanced topics in database management systems with a focus on object-oriented technology.  

Subject description  
Topics covered will be selected from transaction management, distributed databases, query optimisation, performance analysis, advanced data modelling, database security, and object-oriented databases. About 50% of the course will be associated with object-oriented technology. Practical work will include work with some of: Oracle RDBMS (probably HP Unix), ObjectStore OODBMS (Borland C++ with Microsoft Windows), Versant (C and/or C++) with Sun4 Unix) and 3GL program development using C (or C++) and the Cindex database development package (any platform). We make no assumptions about prior experience with C or C++, but students will be expected to be proficient in programming, data structures and have some basic database knowledge.  

Textbooks  
To be advised

IT954  Information Systems Requirements  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and seminars  
Assessment: assignment and project work  
A unit in the automated systems development cluster of the Master of Information Technology.  

Subject aims  
To develop an appreciation of the information systems requirements of organisations; to introduce a range of approaches to requirements analysis and specification; to demonstrate the role of Computer-Aided Software Engineering (CASE) software in analysis, planning and specification.  

Subject description  
Organisations and information technology; types of systems; information systems strategies; analysis methods; reverse engineering, design recovery; systems planning; specification techniques; automated support for requirements analysis.  

Textbooks  
To be advised

IT964  Resources for Information Systems Development  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and seminars  
Assessment: assignment and project work  
A unit in the Automated Systems Development cluster of the Master of Information Technology.  

Subject aims  
To develop an appreciation of the human and organisational aspects of information systems development; to introduce techniques for the effective utilisation and management of information technology resources.  

Subject description  
Trends in information technology; impact of information technology on people and organisations; management of the information systems function; estimation methods for information systems development: evaluating the effectiveness of information systems.  

Textbooks  
To be advised

IT974  Systems Strategies  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and seminars  
Assessment: assignment and project work  
A unit in the automated systems development cluster of the Master of Information Technology.  

Subject aims  
To develop awareness of a range of approaches to meeting the information systems requirements of organisations; to study the influence of automated development methods on the systems development process.  

Subject description  
Architecture of information systems: standard solutions; packages and templates; application re-use; evolutionary development of information systems; reverse engineering; system integration.  

Textbooks  
To be advised

IT984  Automated Development Methods  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and seminars  
Assessment: project work  
A unit in the automated systems development cluster of the Master of Information Technology.  

Subject aims  
To introduce methods for designing information systems; to express designs in forms suitable for automated development; to be able to forecast the performance of an information system.
Subject description
The software design process; design techniques for information systems; performance forecasting; Computer Aided Software Engineering (CASE) tools; system implementation; system maintenance.

Textbooks
To be advised

IT993 Research Project
25.0 credit points per semester (total 50.0 credit points)
No. of hours per week: eight hours for two semesters
Instruction: guided research
Assessment: by thesis. However, performance of the students is monitored by regular progress reports on the project to the supervisor. These reports may be written, oral or both

A unit in the research project cluster of the Master of Information Technology.

Subject aims
To give students the opportunity to pursue in greater detail than in a cluster project unit a topic of interest; to allow students to fully experience the design and development of a major research project.

Subject description
The topic for the project will be selected by the student after consultation with either the Computer Science department or the Information Systems department or both. Prior to commencing their project, students may be required to undertake a short course of study in research concepts and methodologies. Students may be required to present one or more seminars on the subject of their research and to attend other seminars on related subjects.

Textbooks
To be advised

References
To be advised

IT996 HCI Project
12.5 credit points
No. of hours per week: two hours
Instruction: guided research
Assessment: expected to take the form of a written report of perhaps a total of 10,000 words, which may be varied if the problem includes system implementation

A unit of the human-computer interaction (HCI) cluster of the Master of Information Technology.

Subject aims
To give students the opportunity to pursue a topic of interest in detail: to give students experience in the design and development of research; to integrate material dealt with in the taught components of the cluster.

Subject description
Generally the project shall be undertaken on an individual basis, and will be goal directed. The project should require research into a specific area (eg. the use of fuzzy logic, knowledge acquisition tools, learning in particular domains, etc.). The project may have either a theoretical (review) or practical (implementation) nature, but in either case will require the gathering of information from and the reading of relevant literature. Material gathered must be structured and analysed with a view to forming and reporting conclusions of relevance to the specific question posed.

Textbooks
As relevant to the research topic

IT999 ISE Project
12.5 credit points
No. of hours per week: two hours
Instruction: guided research
Assessment: a written report, the extent of which will be determined by the nature of the project

A unit of the intelligent systems engineering (ISE) cluster of the Master of Information Technology.

Subject aims
To give students the opportunity to pursue in detail a topic of interest; to give students experience in the design and development of research; to integrate material dealt with in the taught components of the cluster.

Subject description
Generally the project shall be undertaken on an individual basis, and will be goal directed. The project should require research into a specific area (eg. the use of fuzzy logic, knowledge acquisition tools, learning in particular domains, etc.). The project may have either a theoretical (review) or practical (implementation) nature, but in either case will require the gathering of information from and the reading of relevant literature. Material gathered must be structured and analysed with a view to forming and reporting conclusions of relevance to the specific question posed.

Textbooks
To be advised

ME249 Environmental Engineering
10.0 credit points
No. of hours per week: four hours

A second-year subject of the degree course in environmental health.

Subject description
Part A: Mechanical engineering plant
Principles and standards to be met by heating, ventilating, lighting, air-conditioning, refrigeration, steam and high pressure hot water plant — tests on boiler plants such as the Ringleman, O2, CO and CO2 tests. Recognition and analysis of problems, reports and recommendations, maintenance of records.

Part B: Vibration/acoustics
Theory and practice of vibration and noise control applied to equipment and plant including ventilation systems and food processing plant. Codes of practice for noise emission and control.

Minimising the health risks associated with high levels of vibration and noise.

MP107 Engineering Drawing
5.0 credit points
No. of hours per week: two hours

A first-year subject of the degree course in environmental health.

Subject description
Introduction to the technique of engineering drawing: equipment, methods and standards. Illustration of buildings, equipment, materials in drawn form including concept of scaling. Interpretation of symbols relative to the illustration of buildings, equipment and materials.

Topics will include dwelling construction, ventilation systems, waste disposal equipment, drains and pipeworks.
SA203  Building Standards  
8.0 credit points  
No. of hours per week: four hours  

**Subject description**  
A second-year subject of the degree course in environmental health.  

Introduction to the elements of construction with particular emphasis on housing including timber-framed, brick veneer and cavity brick dwellings. Examination of foundations, footings, internal and external claddings, framing and roof structures.  

Water disposal theory with reference to vented, vented modified, single stack, single stack modified systems. Standards of installation, applications and inspection methods.  

Consideration of various forms of construction practices related to concrete, steel, timber and masonry. Relevant provisions of building and plumbing legislation, codes and standards.  

Plan review technique.

SA508  Industry Based Learning  
50.0 credit points  

A six-month period of employment experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Environmental Health). Students are supervised by a member of the academic staff, and are required to complete a Competency Attainment Program.

SA608  Industry Based Learning  
50.0 credit points  

A six-month period of employment experience occurring as part of the third year of the course leading to the degree of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to complete a Competency Attainment Program.

SC100  Environmental Health  
5.0 credit points  
No. of hours per week: two hours  
Assessment: assignment and examination  

A first-year subject of the degree course in environmental health.  

**Subject description**  
Historical background: a history of public health in Victoria and the impact of environmental health on the prevention of spread of infectious diseases.  

Professional role: professional practice of the environmental health officer in government and industry. Concepts of environmental health.  

Administration: the structure and role of state and local government agencies involved in environmental health and pollution control.  

A brief overview of appropriate legislation that the environmental health officer is required to administer.

SC108  Biology  
7.5 credit points  
No. of hours per week: four hours (two hours of lectures and two hours of practical work)  

A first-year subject of the degree course in computer-aided chemistry/biochemistry.  

**Subject description**  
Cell structure and function.  


Basic microbiology: Elements of microbial world covering viruses, rickettsia, bacteria, algae, protozoa and fungi. Methods of growing, isolating and handling microorganisms. Microbes and pathogenicity.  


Practical work covering the above topics.

SC109  Biology  
5.0 credit points  
No. of hours per week: four hours  

A first-year subject of the degree course in environmental health.  

For details, see SC108 Biology.

SC133  Chemistry  
7.5 credit points  
No. of hours per week: three hours  
Assessment: examination and assignments  

A first-year subject for students completing the Psychophysiology major in Applied Science.  

Atomic structure, shapes of molecules, chemical bonding.  

Organic chemistry — amines, aromatic compounds, amino acids, peptides, proteins, purines, pyrimidines.  

Equilibria, kinetics, acid-base chemistry.

SC154  Chemistry  
12.5 credit points  
No. of hours per week: five hours  

A first-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.  

**Subject description**  
Quantitative aspects of chemical reactions with strong emphasis on writing and using balanced chemical reactions.  

Properties of chemical reactions; extent and equilibria involving gases and solutions.  

Electrical energy and chemical reactions — redox; galvanic cells, electrode potentials and the Nernst equation. Heat energy and chemical reactions — thermochemistry; Enthalpy and Hess’s Law, calorimeters.  

Kinetics of chemical reactions; order, rate equation, reaction mechanism.  

Organic chemistry; nomenclature, reactions and classes of compounds.
SC208 Biology
12.0 credit points
No. of hours per week: four hours
A first-year subject of the degree courses in computer-aided chemistry/biochemistry. 

Subject description
The course introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialized functions and then proceeds to treat the following systems in some detail.

Cardiovascular system: properties of blood; anatomy and physiology of the heart. Mechanical and electrical events of the cardiac cycle; cardiac output. Regulation of heart rate and blood pressure, haemostasis.

Respiratory system: anatomy of the respiratory system; gas exchange and transport; control of respiration. The properties of haemoglobin.


Digestive system: the arrangement and functions of the digestive system.

Skeletal system: calcium regulation, structure of bone.

Muscular system: types of muscle and their roles.

Immune systems: reticulo endothelial system. Inflammation, phagocytosis; lymphocytes, cell-mediated immunity, antibody-mediated immunity.

Nervous system: nerves and excitability; transmission, the synapse; simple reflex arc. Overview of functions and structures in the central nervous system.

Endocrine system: functions. Major glands, their products and functions.

Reproductive system: anatomy, gametogenesis, contraception, pregnancy.

Integration of body systems: responses to stresses such as exercise, shock.

Practical work in the course includes use of the microscope in the examination of cells and tissues, the testing of body parameters and physiological functions using biological models and equipment.

SC209 Biology
12.0 credit points
No. of hours per week: four hours
A first-year subject of the degree course in environmental health.

For details see SC208 Biology.

SC252 Biological Chemistry
10.0 credit points
No. of hours per week: Five hours
A first-year subject in the degree course in environmental health.

Subject description
Organic chemistry: alkanes, alkenes, alkynes; benzene and derivatives; alcohols, aldehydes, carboxylic acids; esters, ethers; amines, amides; IUPAC nomenclature; polymers.

Chemistry of living cells: cellular homeostasis; major organic groupings in tissues; biologically useful energy and ATP.

Protein structure and function: relation to catalysis, transport, pumping. Membrane structure and function; membrane potentials; impulse transmission. Generation of ATP, glycolytic pathway; anaerobic ATP generation; Krebs' cycle; fatty acid oxidation; electron transport; oxidative phosphorylation. Practical work: illustrative of some of the above topics.

SC254 Chemistry
26.0 credit points
No. of hours per week: twelve hours
A first-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Chemical bonding: electronic structure of atoms; spectra, energy levels, electronic configuration of elements, periodic table. Electronic structure of molecules: arrays; covalent, ionic, polar, metallic bonds, multiple bonds, resonance, shapes of molecules, molecular orbital theory, hybridization. Organic chemistry: alkenes and alkynes; benzene and other aromatic compounds; alcohols; ethers; nitriles and amines; aldehydes and ketones; carboxylic acids and their derivatives. Inorganic chemistry: ionic bonding; intermolecular forces. Analytical chemistry: precipitation equilibria; complex ion equilibria.

Physical chemistry: thermodynamics: first law; thermochemistry; second law; entropy; free energy and equilibria; kinetics.

Practical chemistry: analytical; volumetric, gravimetric, instrumental, project work; inorganic: synthesis, reactions; organic: techniques, synthesis, reactions, characterisation of products.

SC318 Microbiology
7.0 credit points
No. of hours per week: four hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Basic microbiology: general anatomy of the bacterial cell. Structure and function of bacterial components. Bacterial nutrition and growth. Types and composition of media for growth. Special growth techniques — anaerobic, enrichment. Counting techniques as a method for measuring bacterial growth. These will also include simple field techniques such as millipore filtration and MPN counts.

Sterilisation methods: a wide range of physical and chemical methods of sterilisation and disinfection will be taught. The methods will range from heat and radiation methods which are suitable for laboratories to chemicals and chlorine which are suitable for extensive waterways.

Practical work will be conducted in conjunction with the above topics.

SC349 Microbiology
8.5 credit points
No. of hours per week: four hours
A second-year subject of the degree course in environmental health.

Subject description
nutrition and growth. Types and composition of media for growth. Special growth techniques — anaerobic, enrichment. Counting techniques as a method for measuring bacterial growth. These will also include simple field techniques such as millipore filtration and MPN counts.

Sterilisation methods: a wide range of physical and chemical methods of sterilisation and disinfection will be taught. The methods will range from heat and radiation methods which are suitable for laboratories to chemicals and chlorine which are suitable for extensive waterways.

Practical work will be conducted in conjunction with the above topics.

SC353  Applied Chemistry
10.0 credit points
No. of hours per week: four hours
A second-year subject in the degree course in computer-aided chemistry.

Subject description

Inorganic reactions: a study of the major classes of inorganic reactions and associated equilibria. Application of such reactions to the separation and identification of common metal cations and anions in multi-component solutions and commercial products. This component of the course is done as practical work.

Kinetics of complex reactions: consecutive, parallel and reversible first-order reactions; non-equal initial concentrations; enzyme kinetics; free radical and chain reactions; the internal combustion engine and air pollution; batch and flow reactions.

Introduction to the chemical industry and chemical processing: fluid flow; heat transfer; separation processes; process analysis; process control.

SC360  Practical Chemistry
12.0 credit points
No. of hours per week: seven hours
A second-year subject in the degree course in computer-aided chemistry.

Subject description
Quantitative analysis: manual titration, colorimetry, atomic absorption, electrodeposition, GC, HPLC and a project in quantitative atomic absorption.

Physical chemistry experiments in thermodynamics, phase equilibria and spectroscopy.

SC362  Biochemistry
7.0 credit points
No. of hours per week: two hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Introduction to biomolecules: monosaccharides, disaccharides, polysaccharides, amino acids, polypeptides, structure of proteins, lipids, nucleotides, enzymes, coenzymes, nucleic acids.

Enzyme kinetics: simple enzyme mechanisms, Michaelis-Menten kinetics, inhibition.

Catabolic pathways: catabolic pathways for carbohydrate, lipid and protein.

Biosynthesis of ATP.

SC365  Practical Biochemistry
7.0 credit points
No. of hours per week: four hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Laboratory exercises will include quantitative spectrophotometric analysis, colorigenic assay, biochemical extractions and analyses, model building of peptides, enzyme kinetics, computer simulated enzyme catalysis, isoenzyme analysis, and enzyme assays. The program supports the theory content of SC362 Biochemistry by illustrating biochemical structures, enzyme kinetics and metabolic pathways. As well as practice in basic biochemistry laboratory techniques and procedures skills emphasised by the practical program including protocol interpretation and design, calculations and interpretation of data from quantitative analyses.

SC370  Chemistry
15.0 credit points
No. of hours per week: six hours
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Thermodynamics: formation; reaction; variations with temperature; chemical potentials; available work.

Phase equilibria: one and two component systems, with emphasis on practical applications.

Organic chemistry: aromaticity.

Chromatography: general principles; column chromatography, GC, HPLC.

Analytical chemistry: sampling.

Spectroscopy: basic instrumentation; atomic, UV/visible and IR spectra.

SC380  Practical Chemistry
7.0 credit points
No. of hours per week: three hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Analytical techniques: volumetric analysis, analysis using an atomic absorption spectrometer, UV/visible spectrometer, gas chromatograph and high performance liquid chromatograph.

Physical experiments: thermodynamics and phase equilibria.

SC390  Computers in Chemistry
7.0 credit points
No. of hours per week: three hours
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Computer jargon, external and internal computer structure, operations of hardware and software, binary and hexadecimal notation and ASCII codes.

Disc and file operation using DOS, sub-directories and DOS Shell.


Molecular Modelling using Desk-Top Molecular Modeller.

Simulation of chromatographic resolution and kinetics.
Subject description
Company organisation and communications, problem-solving, example case study, patents, chemical economics, chemistry case study, decisions case study.

SC414  Industrial Problem-Solving
4.0 credit points
No. of hours per week: two hours
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Training and practice in the preparation of structured written reports, using scientific theories, models and/or hypotheses as the subject matter.
Literature review on a selected scientific topic.
Preparation of a curriculum vitae.

SC418  Microbiology
6.0 credit points
No. of hours per week: three hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Taxonomy and identification of the major groups of bacteria with particular reference to those organisms which are associated with food poisoning (e.g. staphylococci, salmonella) or whose pathogenic characteristics might be associated with ingestion of food.

SC430  Scientific Communication
2.0 credit points
No. of hours per week: one hour

Subject description
Training and practice in the preparation of structured written reports, using scientific theories, models and/or hypotheses as the subject matter.

SC451  Food Microbiology
10.0 credit points
No. of hours per week: five hours
A second-year subject of the degree course in environmental health.

Subject description
Food Hygiene
Microbiological factors — micro-organisms involved in food spoilage (especially in relation to the dairy, meat, wine, canning and bottling industries). Conditions that promote or inhibit food spoilage during food handling and storage. Pathogenic micro-organisms commonly transmitted via foods. Methods used to minimise unwanted microbial growth. Determination of shelf life.
Interpretation and application of the microbiological aspects of the Food Code. Food toxins of microbiological origin.
Use of micro-organisms
Use of micro-organisms in the flavouring of foods.
Use of micro-organisms in the preserving of foods (e.g. yoghurt, cheese, beer, wine).
Use of micro-organisms in the manufacture of foods (e.g. vinegar, alcoholic beverages, cheese, sour cream, vitamins, etc.).

SC453  Applied Chemistry
6.0 credit points
No. of hours per week: two hours
A second-year subject in the degree course in computer-aided chemistry.

Subject description
Organophosphorus-silicon chemistry. Basic NMR. Preparation, reactions and reaction mechanisms of organophosphorus and silicon compounds, using examples of industrial importance. An introduction to basic proton NMR is also included.
Polymer chemistry: classification of polymers. Introduction to polymerisation reactions, including industrial polymerisation processes. Characteristic properties of polymers and their measurement, including molecular weight determinations and crystallinity by X-ray spectroscopy.

SC460  Practical Chemistry
12.0 credit points
No. of hours per week: seven hours
A second-year subject in the degree course in computer-aided chemistry.

Subject description
Organic techniques: volumetric analysis, steam distillation, rotary evaporation, recrystallisation, syntheses, identification and characterisation of individual compounds and mixtures using chemical tests, physical measurements, gas chromatography, infra-red spectrometry and polarimetry, practical test.

SC462  Biochemistry
7.0 credit points
No. of hours per week: two hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Anabolic pathways: biosynthetic pathways leading to glucose, glycogen, lipid, protein, DNA.
Regulation and control of metabolism: control mechanisms operating at the level of the gene and at enzyme level.
Examples will particularly be drawn from fermentation pathways.
This subject will particularly use literature assignments in order to cover the syllabus.

SC465  Practical Biochemistry
5.0 credit points
No. of hours per week: three hours
A second-year subject in the degree course in computer-aided biochemistry.

Subject description
Laboratory exercises include protein purification and analysis, and experiments in metabolism and metabolic control.
Techniques used will include thin layer chromatography, gel filtration, selective precipitation, ion exchange, gel electrophoresis, spectrophotometric and enzymatic analysis of metabolites and the use of the oxygen electrode.
Environmental Science
12.5 credit points
No. of hours per week: five hours
A second year subject of the degree course in environmental health.
Subject description
Meteorology: atmospheric variables, measurement of humidity, air pollution, atmospheric stability, inversion, plume behaviour, local effects.
Domestic chemistry: Chemistry in the household (detergents, pesticides, renovating chemicals, motor chemicals, swimming pool chemicals, proper handling and disposal of domestic chemicals).

Epidemiology
7.5 credit points
No. of hours per week: three hours
A second year subject in the degree course in environmental health.
Subject description
Overview, nature and scope of epidemiology. Nature, transmission and control of various diseases of public health importance including: exotic diseases, sexually transmitted diseases, myco-bacterial and viral infections, food-borne diseases, skin contact diseases, parasitic infections and zoonotic diseases.
Immunology and immunisation procedures with particular reference to Victorian requirements.

Chemistry
13.0 credit points
No. of hours per week: five hours
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.
Subject description
Infra-red spectroscopy. Coordination chemistry: fundamentals.

Practical Chemistry
6.0 credit points
No. of hours per week: four hours
A second-year subject in the degree course in computer-aided biochemistry.
Subject description
Organic techniques: volumetric analysis, steam distillation, use of rotary evaporation, recrystallisation, syntheses, identification and characterisation using chemical tests, physical measurements, gas chromatography, infra-red spectrometry, polarimetry and practical test.

Computers in Chemistry
7.0 credit points
No. of hours per week: three hours
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Statistical treatment of chemical data using spreadsheets: errors, distributions, confidence limits, significance tests, lines and curves of best fit, quality control charts.
Use of macros to automate spreadsheets.
Exercises using the Acid-Base package.

Human Biochemistry
5.0 credit points
No. of hours per week: two hours
A fourth-year subject in the degree course in computer-aided biochemistry.
Subject description
Control mechanisms operating in living organisms. Steroid and trophic hormone effects. Their target tissues and activities at the enzyme and nucleic acid levels. Also includes amplification of signals through receptors, types of receptors and synthetic analogues modifying the signals. Abnormal hormone patterns and their relationship to disease processes. The role of chemical analysis in the treatment and diagnosis of disease.
Clinical biochemistry.
Organisation of clinical laboratories automation and quality control.
Computers in the clinical laboratory

Industry Based Learning
50.0 credit points
A six-month period of employment experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computer-Aided Chemistry and Computer-Aided Biochemistry). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

Research Skills
5.0 credit points
No. of hours per week: two hours
A fourth year subject of the degree course in environmental health.
Subject description
Students are introduced to research methods, both quantitative and qualitative, in preparation for a major research project.

Applied Chemistry
16.0 credit points
No. of hours per week: seven hours
A fourth-year subject in the degree course in computer-aided chemistry.
Subject description
Introduction to catalysis.
Applied Organic Chemistry
Chemistry of natural products: saccharides.
Photochemistry: free radicals and their reactions; optical pumping; photochemical reactions; industrial photochemistry.
Polymer Chemistry
Polymer coatings: applications of protective organic surface
coatings; non-convertible and convertible surface coatings, their chemistry and properties.

Colloid and Electrochemistry
Colloid chemistry: origin of the electrical double layer; potentials at interfaces; potential determining ions and ionic adsorption; description of the electrical double layer; electrokinetic phenomena; colloid stability.
Electrochemistry: electrochemical aspects of corrosion: Pourbaix diagrams, passivation of metals, anodic and cathodic protection; corrosion rate determination via electrochemical techniques (polarisation resistance, Tafel extrapolation); Evans diagrams, inhibitors, galvanic corrosion.

Catalysis
An introduction to catalysis with emphasis on acid-base catalysis and examples drawn from the petrochemical industry.

SC560 Practical Chemistry
11.0 credit points
No. of hours per week: seven hours
A fourth-year subject in the degree course in computer-aided chemistry.

Subject description
Selected experiments in electrochemistry and colloid chemistry.
Qualitative and quantitative analysis of an unknown liquid mixture using distillation, physical measurements, an infra-red spectrometer, an NMR spectrometer and a mass spectrometer.
Stereochemistry experiment, infra-red data station experiment and UV experiment.

SC562 Analytical Biochemistry
7.0 credit points
No. of hours per week: three hours
A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description
Separation techniques and purification strategies in biochemistry.
Structure and analysis of proteins.
Nucleic acid technology.

SC565 Practical Biochemistry
10.0 credit points
No. of hours per week: six hours
A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description
Advanced experiments in protein and DNA purification and analysis. Cell fractionation techniques. Enzyme purification and analysis. Physical techniques will include use of spectroscopy and fluorescence spectroscopy, various forms of gel electrophoresis, molecular weight determinations and use of the ultracentrifuge.

SC567 Environmental Health Practice (2)
7.0 credit points
No. of hours per week: three hours
A fourth year subject of the degree course in environmental health.

Subject description
Food law: a detailed examination of the role and function of the National Food Authority and appropriate committees. A study of the Food Standards Code. The role of the environmental health officer in food inspection, sampling and seizure procedures.
Accommodation standards: examination of environmental health risks associated with assembly buildings (cinemas, clubs, etc.), public residential accommodation (hostels, rooming houses, etc.), and temporary accommodation facilities including camping areas.
Role of the environmental health officer in ensuring health and safety of occupiers.

SC568 Applied Food Science and Inspection
12.0 credit points
No. of hours per week: five hours
A fourth year subject of the degree course in environmental health.

Subject description
A detailed study of the process involved in the production of foods in particular, those potentially hazardous or liable to spoilage. Including:
- milk and other dairy foods;
- meat products (including smallgoods), poultry, fish;
- frozen, dried, canned and artificially preserved foods;
- bread;
- fruit juices.

SC569 Urban Ecology
10.0 credit points
No. of hours per week: four hours
A fourth year subject of the degree course in environmental health.

Subject description
Basic ecology: components of ecosystems, definitions, pathways for energy and materials in the biosphere, interactions among species, nutrient cycles and balances.
Hazardous waste: types of hazardous materials; environmental chemical processes; environmental and health hazards associated with hazardous materials; sources of hazardous wastes; treatment and disposal of hazardous wastes; prescribed and intractable wastes.
Contaminated sites: sources of contamination, organics, heavy metals; site remediation including vapour extraction, bioremediation, stabilisation; soil washing, cap and contain, removal and disposal.
Environmental auditing.
Case studies.

SC570 Chemistry
15.0 credit points
No. of hours per week: six hours
A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Electrochemistry: fundamentals.
Liquid surfaces: surface chemistry and thermodynamics.
Stereochemistry.
Subject description

Selected experiment in electrochemistry and surface chemistry.
Qualitative and quantitative analysis of an unknown liquid mixture using distillation, physical measurements, an infra-red spectrometer, an NMR spectrometer, and a mass spectrometer.

Stereochemistry experiment and infra-red data station experiment.

SC590 Computers in Chemistry
6.0 credit points
No. of hours per week: three hours

A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Communications.

Instrumental data handling.

SC604 Biotechnology
7.0 credit points
No. of hours per week: three hours

A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description


c) Yeast technology: fermentations involving saccharomyces cerevisiae in the production of alcohol, wines and beers. Descriptions to include processing of starting material, methods of fermentation, biochemical reactions and enzymes. Variation in patterns and metabolism of enzymes in anaerobic and aerobic fermentations. Penicillin and cephalosporin production as examples of secondary metabolism in penicillium chrysogenum and cephalosporium acremonium.

d) Enzyme technology.
Industrial enzymes: sources, methods of production and industrial uses of a range of selected enzymes.

Immobilised enzymes: cells, organelles and co-enzymes. Methods of immobilisation. Typical supports. Spacer groups. Practical applications of immobilised enzymes, cells and organelles in:

(a) dairy, detergent, food and leather industries;
(b) biochemical analysis;
(c) clinical and pharmaceutical industries.

Protein engineering.


f) Downstream processing: a qualitative consideration of the factors and problems involved in translating laboratory findings into pilot plant and finally production plant stages. Factors involved in scale-up to include environmental control factors, mixing relationships, power input, momentum factors, impeller speeds and volumetric mass transfer coefficient. Scale-up based on non-geometric similarity. Alteration of factors in optimising processes.

SC608 Industry Based Learning

50.0 credit points

A six-month period of employment experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computer-Aided Chemistry and Computer-Aided Biochemistry). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SC609 Health Promotion
6.0 credit points
No. of hours per week: two hours

A fourth-year subject of the degree course in environmental health.

Subject description

The course begins by reviewing key concepts and strategies in community health: early identification, treatment, disease prevention, health promotion.

After considering significant historical developments in the area of health education, the following topics will be treated:

- social, cultural and psychological factors involved in health promotion and disease prevention behaviours;
- health education, opportunities and responsibilities for environmental health officers;
- health education strategies and techniques for environmental health officers;
- instructional techniques and communication skills for health promotion;
- needs assessment techniques;
- program evaluation strategies, performance indicators;
- public health plans.

SC653 Process Chemistry
13.0 credit points
No. of hours per week: five hours in semester eight

A fourth-year subject in the degree course in computer-aided chemistry.

Subject description

Extraction of metals: free energy relationships applied to metal extraction; thermodynamic basis of free energy relationships. Pyrometallurgical processes for the extraction of metals from their ores.
Explanation of various aspects of these processes in terms of free energy relationships.

Catalysis and selected chemical processes: catalysts used in the large-scale industrial production of organic chemicals. The concepts of organometallic chemistry to a level sufficient to allow an understanding of the design, preparation and mechanisms of such catalysts will be presented. Students will also work in groups to prepare a written report on a selected catalytic process.


Analysis and identification of polymers: differential thermal analysis; gel permeation chromatography; polymer applications of infrared and NMR spectroscopy; pyrolysis gas chromatography.


SC660  Practical Chemistry
11.0 credit points
No. of hours per week: seven hours in semester eight
A fourth-year subject in the degree course in computer-aided chemistry.

Subject description
HPLC and GC/MS experiments.
Analysis of a food product using an atomic absorption spectrometer.

Project.

SC661  Environmental Analysis and Control
9.0 credit points
No. of hours per week: four hours
A fourth-year subject in the degree course in environmental health.

Analysis: review of analytical methods as applied to environmental analytes. Covers compleximetric, acid-base, chromatographic, electrochemical and spectrochemical techniques. Practical work related to these techniques.

Control: use of process flow diagrams. Simple process calculations (stoichiometry, combustion, heat and mass balances).

Disposal and dispersal of pollutants — air, water and land pollution. Current issues: acid rain, greenhouse effect, ozone depletion, photo chemical pollution.

Case studies/field trips.

SC662  Analytical Biochemistry
5.0 credit points
No. of hours per week: two hours in semester eight
A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description
Radioisotope methods. Immunochemistry and its applications in chemical and biochemical analysis. Computer analysis in biochemistry. Use of spectroscopy for biochemical analysis (e.g. NMR, mass spec.).

SC665  Practical Biochemistry
7.0 credit points
No. of hours per week: four hours in semester eight
A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description
A major research project in biochemistry is carried out by the student. An experimental exercise in support of SC662 lectures on radioisotopes and immunology is scheduled late in the semester.

SC667  Environmental Health Practice (3)
5.0 credit points
No. of hours per week: two hours
A fourth-year subject of the degree course in environmental health.

Subject description
Applied pest control encompassing: principals of taxonomy, lifecycles and general characteristics of insect species, pest species detection and identification, control measures and techniques.

SC668  Research Project
16.0 credit points
No. of hours per week: eight hours
A fourth-year subject of the degree course in environmental health.

Subject description
Students undertake a research program on an environmental health topic which can include science, engineering, law, administrative or social issues.

SC670  Chemistry
10.0 credit points
No. of hours per week: four hours in semester eight
A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Ion exchange and solvent extraction: principles and applications in industrial, laboratory and biochemical situations.

Organic chemistry: carbocations, heterocyclics.
Laboratory analyzers, with specific discussion of detectors, amplification, frequency response, digital systems and clinical analyzers.

SC680  Practical Chemistry
5.0 credit points
No. of hours per week: three hours in semester eight
A fourth-year subject in the degree course in computer-aided biochemistry.

Subject description
HPLC and GC/MS experiments.
Analysis of a food product using an atomic absorption spectrometer.

Molecular modelling using the IRIS computer.
SC690 **Computers in Chemistry**
6.0 credit points
No. of hours per week: three hours in semester eight
A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.
**Subject description**
ANOVA, regression and experimental design.
Simplex optimisation.
HPLC optimisation.
Forecasting.
Project Management.

SC708 **Scientific Communication 7**
2.0 credit points
No. of hours per week: one hour in semester seven
**Subject description**
Training and practice in the presentation of oral reports to industrial, scientific and general audiences.
Special requirements of oral reporting, including the use of audio-visual aids.

SC709 **Employment Experience**
30.0 credit points
A six-month period of industry-based learning in the Graduate Diploma in industrial chemistry. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SC716 **Basic Colloid Science**
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.
**Subject description**

SC717 **Basic Surface Science**
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.
**Subject description**
Surface models, surface thermodynamics and the properties of curved surfaces. Liquid surfaces and the concept of surface tension. Methods for measuring surface tension. Spreading of liquids; wetting, contact angles and adhesion. Adsorption and orientation of monolayers and of surfactants at interfaces.

SC718 **Surface Characterisation**
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.
**Subject description**
Determination of surface area and particle size using, for example, photon correlation spectroscopy. Surface spectroscopy (including electron microscopy), other aspects of light scattering and traditional (UV, IR) spectroscopy. Rheological characterisation. Macroscopic phenomena such as the order/disorder transition. Flocculation kinetics. Osmotic compressibility, advanced techniques for measuring zetapotential, and other techniques for characterising macroscopic colloidal behaviour such as long-term stability. Porosimetry and the adsorption of gases.

SC719 **Chemistry of Inorganic Colloids**
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in applied colloid science.
**Subject description**
Van der Waals forces — deficiencies of the classical microscopic approach. Interaction energies calculated from dielectric and spectral data. Application of Van der Waals forces to contact angles, wetting, spreading and adhesion. The charge and potential characteristics of a number of different types of colloidal material. Differences in the origin of charge between common dispersions, eg. clays and sulphides, and its influence on particle stability. Application of colloidal dispersions to industry.

SC720 **Applied Chemical Techniques**
12.5 credit points
No. of hours per week: four hours
Instruction: lectures and assignment work
A subject in the Graduate Diploma in Industrial Chemistry.
**Subject description**
Computers in chemistry. Spectroscopy: IR, UV/visible and atomic. Chromatography: GC and HPLC.

SC721 **Properties of Colloids and Interfaces**
12.5 credit points
No. of hours per week: four hours
Instruction: lectures/tutorials
A subject in the Graduate Diploma in Industrial Chemistry.
**Subject description**
Classification and scope of colloidal systems and interfaces. The properties of curved surfaces. Concepts of surface tension and surface activity. Absorption and orientation at interfaces. Wetting and spreading of liquids on solids; concept of contact angle. Origin of charge and electrical double layer on surfaces in aqueous dispersions — potential determining ions, ionic adsorption. Electrokinetic phenomena — zeta potential. Stability of colloidal dispersions. Throughout the lecture course, strong emphasis is given to applying the basic concepts and principles to practical examples of the uses of colloids.

SC723 **Industrial Chemistry**
12.5 credit points
No. of hours per week: four hours
Instruction: lectures/tutorials/assignments
A subject in the Graduate Diploma in Industrial Chemistry.
Subject description
NMR spectroscopy, mass spectrometry and Fourier transform techniques.
Liquid surfaces.
Electrochemistry.

SC725 Practical Chemistry
12.5 credit points
No. of hours per week: four hours
Instruction: practical work
A subject in the Graduate Diploma in Industrial Chemistry.
Subject description
Analytical experiments using GC, HPLC, AA, UV/visible and IR techniques.

SC729 Industrial Microbiology
12.5 credit points
No. of hours per week: two hours
Instruction: lectures
A subject in the Graduate Diploma in Industrial Chemistry.

Subject description
Students study subject areas from six options.
The subject areas are:
- microbial genetics
- fermentation technology
- fermentation reactions
- enzyme technology
- waste treatment and disposal
- down stream processing.

SC731 Practical Biochemistry
12.5 credit points
No. of hours per week: six hours
Instruction: practical work
A subject in the Graduate Diploma in Industrial Chemistry.

Subject description
The practical work covers a range of laboratory exercises and common techniques used in biochemical and chemical laboratories. These techniques include estimation of disulphide and thiol groups in proteins, fluorescence spectroscopy, affinity chromatography, fractionation using ultracentrifugation, antibody labelling techniques, gel electrophoresis and enzyme kinetics.

SC732 Practical Work
12.5 credit points
No. of hours per week: four hours
A subject in the Graduate Diploma in Industrial Chemistry.

Subject description
Liquid surfaces and electrochemistry experiment.
Qualitative and quantitative analysis of an unknown liquid mixture using distillation, physical measurements, an IR spectrometer, an NMR spectrometer and a mass spectrometer.

SC733 Practical Techniques in Colloid Science
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

Subject description
Preparation and characterisation of simple colloids. Potentiometric and conductimetric titrations of colloids to yield surface charge. Influence of electrolyte concentration and pH on surface charge. Micro-electrophoresis and the measurement of electrophoretic mobility (for colloids), which results in measurement of the zetapotential. The influence of zetapotential and electrolyte concentration (and type) on colloidal stability.

SC734 Practical Techniques in Surface Science
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

Subject description

SC735 Elective Practical Skills
7.5 credit points
No. of hours per week: four hours for five weeks
A subject in the Graduate Diploma in Applied Colloid Science.

Subject description

SC736 Research Skills, Part 1
5.0 credit points
No. of hours per week: two hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

Subject description
Experimental design including the importance of the null result and "blank" experiment, choice of experimental points, parameter variation and chemimetrics. The importance of prior preparation and choice of experimental variables. Literature searching skills and background theory. A major portion of this subject will be devoted to designing a project to be carried out either in SC538 or SC757.

SC737 Research Skills, Part 2
5.0 credit points
No. of hours per week: two hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

Subject description
Data manipulation and presentation, including statistics and methodology of data handling. Use of software packages in data manipulation. Presentation of data including an oral presentation involving work carried out either in SC538 or SC757.

SC738 Minor Research Project
7.5 credit points
No. of hours per week: four hours for five weeks
A core subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

Subject description
A minor research project carried either at the student's place of work or at Swinburne and involving a closely supervised project of the student's choice.
<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Title</th>
<th>Credit Points</th>
<th>Prerequisites</th>
<th>Course Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC739</td>
<td>Colloid Rheology</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. SC716 and SC717 are recommended prior to this subject. Subject description Simple and complex rheology. Include complex rheology using dynamic oscillatory rheology.</td>
</tr>
<tr>
<td>SC741</td>
<td>Physical Properties of Surface Coatings</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Master; (by coursework) in Applied Colloid Science. Subject description Surface physics including colour reflectivity and surface hardness. Drying of films and the role of pigment dispersion to successful drying. Surface rheology and other characterisation, including spectroscopy. Measurement and influence of critical pigment volume and humidity. Tactile strength and durability.</td>
</tr>
<tr>
<td>SC742</td>
<td>Corrosion and Protection of Metals</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. Subject description Electrochemical principles of corrosion. Thermodynamic aspects of corrosion. Pourbaix diagrams, protective measures. Kinetics of corrosion; electrochemical techniques for determining corrosion rate, corrosion inhibition, inhibitors, passivation, anodic and cathodic protection. The unit will include some practical work on corrosion measurement and galvanic corrosion.</td>
</tr>
<tr>
<td>SC743</td>
<td>Food Colloids</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. SC716 is recommended prior to this subject. Subject description Emulsion theory and colloid rheology as applied to foods. Common emulsifiers in food and their safety, use, detection purpose. Wettability of non-aqueous materials (eg. fats, flour) in the presence and absence of emulsifiers. Applicability of colloid theory to foods.</td>
</tr>
<tr>
<td>SC744</td>
<td>Chemistry of Surfactants</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. Subject description The origin, manufacture, nature and use of surfactants. The choice of cationic, anionic or non-ionic surfactants. Environmental and safety aspects of surfactants and an introduction to the detection and determination of surfactants. Adsorption at interfaces, wettability and contact angle. Selection of surfactants for particular tasks, eg. the choice of emulsifiers and the role of the HLB (hydrophobe-lypophobe balance). An introduction to the stability and rupture of thin films and foams. Applications of surfactants (eg. emulsions and detergency). Solution properties of detergents (introduction) (eg. micellisation, phase diagrams, surface tension and solubilisation).</td>
</tr>
<tr>
<td>SC745</td>
<td>Solution Behaviour of Surfactants</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. Subject description Phase behaviour, diagrams and maps for surfadant systems at an advanced level. Properties, detection and thermodynamics of surfactant phases such as micelles, liquid crystals and lamellae. Preparation of soap, tertiary oil recovery and other uses of phase maps. Properties, preparation, characterisation and uses of microemulsions.</td>
</tr>
<tr>
<td>SC746</td>
<td>Advanced DLVO Theory</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. Subject description DLVO (Deryaguin-Landau-Verwey-Overbeek) theory — mathematical interpretation of colloidal stability based on the addition of attractive dispersion forces and repulsive electrostatic forces. Interaction between atoms, leading to an overall generalisation for macroscopic interactions. Derivation of the relationship between charge and potential under conditions of constant charge, constant potential or charge regulation. Free energy of the electrical double layer. The role of DLVO theory to the adsorption of small ions. Detailed derivation of the Poisson-Boltzmann equation which relates charge and potential.</td>
</tr>
<tr>
<td>SC747</td>
<td>Adsorption from Solution</td>
<td>7.5</td>
<td>No. of hours per week: four hours for five weeks</td>
<td>An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science. Subject description An overview of forces involved in adsorption from solution. The role of electrostatics, solvation and chemical terms. Chemical modelling (site binding).</td>
</tr>
</tbody>
</table>
Uptake onto colloidal materials of toxic aqueous pollutants such as heavy metals, anions, organics and polymers. Industrial significance of adsorption and its implications in waste water treatment. Practical aspects of adsorption phenomena including experimental design. Adsorption of simple electrolytes.

**SC748 Water Treatment Technology**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC716 and SC717 (SC747 is advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**
Implications of colloidal chemistry in waste water treatment. The role of adsorption phenomena in waste water treatment. Biological and non-biological treatment technologies. An overview of common and advanced treatment technologies including alum flocculation, biochemical treatment, cellular foam microbial degradation and adsorbing colloid flotation. Emphasis will be placed on those technologies using colloidal principles to separate contaminant from clean water.

**SC749 Polymer Flocculation**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC716 and SC717 (SC747 and SC752 are advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**

**SC750 Detergency**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC744 and SC717 (SC716 is advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**
Detergent action and the role of contact angle, adhesion, cohesion, micellisation and emulsification. Methods of analysis ranging from cloud point determination and two-phase titrations to infra-red and NMR analysis. Detergent biodegradability. Detergent formulation for specific needs, eg. softeners, conditioners. Specific examples of interest, eg. removal of lanolin from wool and the formulation of hair shampoos.

**SC751 Emulsion Technology**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC744, SC716 and SC717

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**
Common methods for obtaining emulsions and their subsequent use. Emulsion polymerisation and the properties of polymer latices. The theory of emulsion stability. Long range (DLVO) and short range (Gibb's-Marangoni) stability. Surface chemical factors and the application of the DLVO theory. Surface elasticity and surface viscosity. The role of macromolecules as emulsion stabilisers. Stabilisation by finely divided solids and the properties of thin films (eg. rupture). Breakdown of emulsions (thermodynamics). Applications to cosmetics, food, bitumen, wax, etc.

**SC752 Polymer Stabilisation Technology**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisite: SC716

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**

**SC753 Thin Films and Foams**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC716, SC717 (SC744 and SC751 are advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**
The properties, stability and rupture of foams. Disjoining pressure, calculation of electrostatics, VOW and steric components of disjoining pressure. Instability and rupture of thin films (advanced). Evidence pertaining to short range hydration and hydrophobic forces, based on experimental studies and statistical mechanical treatments of fluids at interfaces. Application of flotation emulsions and the stability of froths and foams.

**SC754 Light Scattering and Concentrated Dispersions**
7.5 credit points
No. of hours per week: four hours for five weeks
Prerequisites: SC716 and SC717 (SC718 and SC719 are advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.

**Subject description**
Radial distribution function (g(r)) — relationship between g(r) and S(Q) (Q is the scattering vector) — potential of mean force and its link to g(r). Measurement of g(r) through the scattering of radiation and its angular variation — determination of S(Q) using theoretical models, link between S(Q) and osmotic compressibility.
Photon correlation spectroscopy, small angle neutron scattering and low angle X-ray diffraction. Concept of the scattering density parameter, particle form factor \( P(Q) \) and the structure factor \( S(Q) \). Application to microemulsions, latices and pigment dispersions.

**SC755 Surface Chemistry of Clays and Coal**

7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisites: SC716 and SC717 (SC718 and SC719 are advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.  
Application of colloid and surface science to clays and coal.  
Origin of charge, including isomorphous substitution in the case of clays. Clay structure — swelling and non-swelling clays. Behaviour of clays in aqueous and non-aqueous media. Use of clays (e.g., as fillers) and its colloidal implications in use. Importance of colloid chemistry in determining the properties of soils containing clay.  
Origin of charge in coal and determination of rank.  
Differences between brown and black coal. Coal flotation, agglomeration and briquetting. Hydrophobicity and swelling behaviour of coal. Economic importance to Victoria.

**SC756 Mineral Processing**

7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisites: SC716 and SC717 (SC718 and SC719 are advised)

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.  

**Subject description**  

**SC757 Research Project**

10.0 credit points  
No. of hours per week: four hours throughout second and third year

An elective subject in the Graduate Diploma and Masters (by coursework) in Applied Colloid Science.  

**Subject description**  
A research project carried either at the student's place of work or at Swinburne (or a combination) and involving a supervised project of the student's choice. The aim of the project is to provide research skills to the student and to allow the student to study, in detail and at an advanced level, one or more of the principles learned during coursework. Selection and details of the project are a joint venture between the student and staff.

**SC760 Biochemistry**

12.5 credit points  
No. of hours per week: four hours  
Instruction: lectures  
A subject in the Graduate Diploma in Industrial Chemistry.

**SC808 Scientific Communication**

2.0 credit points  
No. of hours per week: one hour in semester eight

**Subject description**  
Literature search and written report on current developments in organic chemistry.  
Obtaining and analysing experimental data.  
Experimental design to eliminate common errors of logic.  
Case studies.

**SC1255 Chemistry**

7.5 credit points  
No. of hours per week: four hours in both first and second semester

This is a first year subject of the degree course in medical biophysics and instrumentation.  

**Subject description**  
Semester One:  
Basic chemical concepts: revision of names, symbols and electronic configurations; chemical reactions.  
Structure of elements and compounds: properties and nature of metallic, ionic and covalent bonding.  
Chemical periodicity.  
Weak bonding interactions: dipole, hydrogen and Van der Waals.  
Stoichiometry: mass-mass; mass-volume; volume-volume and redox calculations.  
Thermochemistry; rates of chemical reactions.  
Equilibria: acid/base, redox, solubility, complexation, speciation.  
Practical work: Chemical reactions, titrations, pH measurement. Equilibria.

Semester Two:  
Organic chemistry: alkanes, alkenes, alkynes; benzene and derivatives; alcohols, aldehydes, carboxylic acids; esters, ethers; amines, amides; IUPAC nomenclature; polymers.  
Chemistry of living cells; cellular homeostasis; major organic groupings in tissues; biologically useful energy and ATP.  
Protein structure and function: relation to catalysis, transport, pumping. Membrane structure and function; membrane potentials; impulse transmission. Generation of ATP; glycolytic pathway; anaerobic ATP generation; Krebs' cycle; fatty acid oxidation; electron transport; oxidation phosphorylation.  
Practical work: illustrative of some of the above topics.

**SC1500 Introductory Chemistry**

12.5 credit points  
No. of hours per week: five hours

A first year subject of the degree course in environmental health.  

**Subject description**  
Basic chemical concepts: revision of names, symbols and electronic configurations; chemical reactions.  
Structure of elements and compounds: properties and nature of metallic, ionic and covalent bonding.
Chemical periodicity.
Weak bonding interactions: dipole, hydrogen and Van der Waals.
Stoichiometry: mass-mass; mass-volume; column-volume and redox calculations.
Thermochemistry: rates of chemical reactions.
Equilibrium: acid-base, redox solubility, complexation, speciation.
Practical work: Chemical reactions, titrations, pH measurement. Equilibria.

SC3400 Food Processing and Analysis
8.5 credit points
No. of hours per week: four hours
A second year subject of the degree course in environmental health.

Subject description
Food processing: introduction to processes used in the food industries for the preparation and processing of foods. Problems or potential problems associated with those processes that have implications for community health.
Food chemistry: techniques used in the determination of the amounts of carbohydrate, protein and lipid in foods. Determination of the amounts of micronutrients in foods. Methods used for determining the water content of foods. Determination of the calorie or joule contents of foods. Other manual and instrumental techniques used in food analysis (e.g., determination of sulphur dioxide). Chemical additives to food will be considered under the following headings: chemical classes of food additives, historical aspects, permitted compounds, reasons for use, function, advantages, disadvantages, breakdown pathways, toxicity testing, regulations controlling use. Classes of chemical additives to be considered will include the following: preservatives, antioxidants, flavouring compounds, colouring compounds, sweetening agents, flavour enhancers, nutrients, emulsifiers. Natural hazards associated with food.
Practical work: Experiments in food analysis — two hours per week.

SK190 Computing for Chemists
10.0 credit points
No. of hours per week: five hours

Subject description
This is an introductory course in computing for students majoring in chemistry. Computing dominates the modern day practice of chemistry from computer-aided automation in the laboratory to scientific research involving supercomputers. The aim of this course is to provide a good foundation in computing principles. No previous computing knowledge is assumed. An introduction to both computers and the DOS operating system is presented. A programming language, currently BASIC or C, is introduced and applied to solve problems typically encountered by physical scientists.

SK2100 Applied Computing Methods
7.5 credit points
No. of hours per week: two hours
Instruction: a combination of lecture and tutorial sessions
Assessment: assignments and examination
A first-year subject of the degree course in environmental health.

Subject description
Software tools: an introduction to the main software tools encountered by environmental health specialists — job command languages, editors, word processors, spreadsheets, etc.
Computer software: an introduction to the use of Microsoft works, illustrated by the use of case studies.
Computer hardware: an introduction to Micro/Mini computer hardware architecture including peripheral devices, communications, sub-systems and current technology I/O systems (graphics, OCR).

SM106 Mathematics
7.5 credit points
No. of hours per week: three hours
Assessment: examination and assignment
A first-year subject in the degree course in psychology and psychophysiology.

Subject description
Functions and graphs
Statistics
Mean and standard deviation. Linear regression in fitting functions to data.

In this subject students learn to use a graphics calculator to solve problems in functions, graphs, differentiation, matrices, vectors and statistics.

**Prescribed text:**

**Prescribed calculators:**
Texas Instruments Advanced Scientific TI-81 graphics calculator.

**SM110 Mathematical Methods**
7.5 credit points
No. of hours per week: three hours
Assessment: tests/ examination and assignments

A first-year subject of the degree course in environmental health.

**Subject description**
Calculations
Reviews of basic mathematical operations; illustrations from environmental and health applications. Use of electronic calculator.

**Numerical methods**
Introduction to numerical methods: errors and their propagation, including rounding errors and loss of significance. Solution of equations in one variable; numerical solution of non-linear equations by iterative methods (bisection, false position, secants, simple iteration, Newton-Raphson).

Linear algebra
Matrices and matrix algebra; determinants and their evaluation. Systems of linear equations: Gaussian elimination; matrix inversion; procedures for numerical solution by direct or iterative methods.

Functions of one variable
Standard functions and their graphs. Transcendental functions: exponential; logarithmic and natural logarithm functions; trigonometric and inverse trigonometric functions. Curves defined by relations or parametrically.

Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Applications of differentiation: graph sketching, using first and higher order derivatives; related rates; optimisation in finite closed intervals.

Integration: definite and indefinite integrals and their interpretations; fundamental theorem; integrals of standard functions; integration by substitution. Use of integral tables.

Numerical integration (rectangle, trapezium and Simpson's rules). Separable differential equations, with or without initial values. Functions of several variables: partial derivatives; maxima and minima.

**SM131 Communication Skills**
7.5 credit points
No. of hours per week: four hours
Prerequisites: nil
Assessment: individual assignment, participation and a test

A first year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

**Subject description**
Communication Skills
In this component written communications skills will be developed with particular reference to situationally appropriate letters, memos, reports and essay writing. Study and research skills will be enhanced by increasing competence in notetaking from oral and printed input and in using library technology. Meeting skills and class presentations will extend oral skills.

**Learning Skills**
This component introduces students to the skills and strategies necessary for developing self-managed learning. Topics will include goal setting and planning, team learning behaviour, time management, learning and memory strategies, motivation, evaluation and stress management skills.

**Textbooks and References**

**SM180 Mathematics 1**
10.0 credit points per semester
No. of hours per week: four hours
Assessment: tests, examinations and assignments

A first-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

**Subject description**
Analytic geometry:
Vectors in 2- and 3- dimensional space: dot and cross products, and resolution. Plane coordinate geometry. Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Numerical calculations:

Functions of one variable:
Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus:
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Applications of differentiation: graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L'Hopital's rule.

Integration: definite and indefinite integrals and their interpretations; integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.

Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change.

Matrix algebra:
Matrices and matrix algebra; determinants. Systems of linear equations; Cramer's rule; Jordan and Gaussian elimination; matrix inversion; procedures for numerical solution by direct and iterative methods.
2D polar coordinates:
Definitions: graphs of equations; transformation to and from
Cartesian coordinates; curve length and area.
Differential equations:
Ordinary differential equations of first order: general and
particular solutions; separable and linear types.
Vectors and geometry:
2D space: dot-product and resolution; parametric equations
of 2D curves; vector differentiation.
3D space: Cartesian and polar coordinates; simple surfaces
and curves in space.
3D vectors: dot and cross-products; vector equations of lines
and planes; parametric equations of 3D curves.
Functions of many variables:
Graphs of surfaces as functions of two or three variables;
partial differentiation and applications; directional derivatives
and gradients; tangent planes to surfaces; differentials and
approximations; optimisation and applications.
Complex numbers:
Complex numbers: definition and arithmetic; polar form;
exponential notation. Solution of polynomial equations.

Textbooks
Row, 1988
Prescribed Calculator: Texas Instruments Advanced Scientific TI-81
Graphics Calculator

SM185 Applied Statistics 1
10.0 credit points
No. of hours per week: three hours
At the time of printing full subject details were unavailable.
Please contact the course convener for further details
(Mathematics Department).

SM278 Design and Measurement 2A
Please see Faculty of Arts subject details for further
information.

SM288 Operations Research: An Introduction to
Problem Solving
10.0 credit points
No. of hours per week: two hours
Prerequisites: nil
Assessment: assignments and examination
A first-year subject of the degree courses in mathematics
and computer science and applied and industrial
mathematics.

Subject description
History and methodology:
Development of operations research: inter-disciplinary team;
methodology; role of techniques; problem formulation;
model building; types of models; testing; validating; design
and data problems; implementation; operations research
literature; operations research societies. Special lectures on
the application of operations research will also be given.
Introduction to linear programming:
Applications of linear programming; formulation of linear
programming problems; graphical solution of two variable
problems; sensitivity analysis; computer based solution using
SAS.
Markov chains:
Applications of Markov chains; formulation of Markov chain
problems; n-step and steady state probabilities.
Heuristics:
Definition of an heuristic; examples of heuristics as applied
to travelling salesman problems and scheduling problems.

Textbooks and References
Journal of the Operations Research Society
Winston, W.L. Operations Research Applications and Algorithms. 2nd
ed, Boston: FWS-Kent, 1991

SM378 Design and Measurement 3
Please see Faculty of Arts subject details for further
information.

SM381 Linear Algebra Geometry
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM180
Assessment: tests/examination and assignments
A second-year subject of the degree courses in mathematics
and computer science and applied and industrial
mathematics.

Subject description
Spaces of vectors and linear equations: real n-dimensional
space; linear dependence of vectors; vector spaces,
subspaces and bases; inner product and orthogonality;
Gramm-Schmidt process; convex sets. Spaces of solutions for
linear equations.
Matrices: rank; elementary operations and equivalence;
nullspace and range. Matrices as operations on vector
spaces.
Square matrices: eigenvalues and eigenvectors; similarity of
simple matrices; real symmetric matrices; applications
including quadratic forms, Markov chains.
Linear operations on 2- and 3-dimensional spaces:
elementary types; geometry of projections, rotations and
reflections.
General linear and non-linear operations on finite
dimensional spaces; geometric aspects of linear and affine
functions; affine approximations to non-linear functions.
Computational aspects of matrix and related problems.
Applications of matrix methods e.g. in computer graphics
and in statistics.

Textbooks and References
Johnson, R.A. and Wichern, DW. Applied Multivariate Statistical
Mathematics Department notes
Searle, SR. Matrix Algebra Useful for Statistics. New York: Wiley,
1982

SM384 Inference and Regression
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM284
Assessment: tests/examination and assignments
A second-year subject of the degree courses in mathematics
and computer science and applied and industrial
mathematics.

Subject description
Revision of hypothesis testing and confidence intervals.
The power of a test: (i) against a specific alternative; (ii) the
power curve.
Two independent samples: tests and confidence intervals.
Differences in location; nonparametric tests, differences in
spread; the F test.
Differences between proportions in large samples.
Goodness of fit, observed and expected frequencies, chi-
square test.
Discrete joint distributions of two variables: marginal distributions, cross-classifications (contingency tables); independence tests.

Hypergeometric test with normal approximation for 2 by 2 case, chi-square.

Continuous bivariate data: Pearson and Spearman correlation.

Regression analysis for a single predictor, estimation of parameters.

F test for the model, tests and confidence intervals for parameters, confidence intervals for the conditional mean, prediction intervals.

Non-linear (single predictor) models, residual plots, checking of assumptions.

Computer packages such as Minitab may be used.

References


SM387 Introduction to Optimisation

10.0 credit points
No. of hours per week: three hours
Prerequisites: nil

Assessment: assignments and examination

A second-year subject of the degree course in mathematics and computer science and applied and industrial mathematics.

Subject description

Linear and integer programming, simplex method, transportation and assignment algorithms, branch and bound methods, deterministic dynamic programming.

Computer packages such as SASIOR, Lotus 123/PROPS may be used.

Textbooks and References

Journal of the Operational Research Society


SM388 Forecasting and Regression

10.0 credit points
No. of hours per week: three hours

At this time of printing full subject details were unavailable. Please contact the course convenor for further information (Mathematics Department).

SM404 Project Management A

10.0 credit points
No. of hours per week: two hours
Assessment: tests, assignments, verbal presentations and participation in tutorial classes and project teams

A second-year subject of the degree course in mathematics and computer science.

Subject description

Applied research project management

Project characteristics: project stages; project management and the project leader; responsibilities of the project leader; project planning; determination of tasks; scheduling tasks; development of project plan; monitoring and control of project; benefits of project management; when to use project management; senior management's responsibilities, the project leader and the project team. Guest speakers and management games may be used. Tutorial classes will be based on experiential exercises in organisational behaviour.

Internal project

Students, working in groups of 3 or 4, will be required to undertake a project for a member of staff. Each group will be totally responsible for managing the project and for bringing it to a successful conclusion. They will be expected to maintain team meeting notes, bar charts, etc., and to provide each staff member with suitable progress reports. In addition, they will be expected to obtain formal approval for the work that they are undertaking from the appropriate staff member. In short, they will be expected to manage the project along the lines of the topics discussed. Verbal and written reports will be required at the end of the semester reporting on the management process and the results of the project.

SM480 Analysis

10.0 credit points
No. of hours per week: three hours
Prerequisite: SM180

Assessment: tests/examination and assignments

A second-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description

Infinite sequences and series

Definition of a sequence; limits; types of divergent behaviour.

Infinite series; some simple tests for convergence; familiar series.

Taylor's Theorem; Maclaurin and Taylor series.

Ordinary differential equations


Functions and function series

Power series, with applications to differential equations. Fourier series of common periodic functions; half-range expansions. Gamma and Bessel functions; Legendre polynomials.

Partial differential equations

General solution of simple equations by integration; solution of boundary value problems using Fourier series. The Laplace, wave and heat flow equations.

Textbooks and References


Mathematics Department notes

SM484 Experimental Design and Multiple Regression

10.0 credit points
No. of hours per week: three hours
Prerequisite: SM384

Assessment: tests/examination and assignments

A second-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.
Subject description
The analysis of variance: revision of inference for two independent groups.
The analysis of variance for single-factor completely randomised designs, randomised blocks, and two-factor equally replicated designs.
Non-parametric methods; planned and unplanned comparisons.
Design of experiments, blocking, the $2^k$ and fractional $2^k$ designs.
Multiple Linear Regression: the linear model with several predictors.
Assumptions for ordinary least squares, methods for checking the assumptions, including normal probability plots, residual plots, the lack-of-fit test and the Durbin-Watson test for autocorrelation, outliers.
Computer packages such as Minitab and SAS may be used.

References

SM485 Distribution Theory and Estimation
10.0 credit points
No. of hours per week: three hours
Prerequisites: SM384
Assessment: tests, examination and assignments

A second-year subject of the degree course in mathematics and computer science and applied and industrial mathematics.

Subject description
Probability distributions: Cauchy and Weibull.
Moments of probability distributions: central and about the origin.
Properties of probability distributions: moment-generating, characteristic, likelihood and log-likelihood functions (discrete and continuous cases).
Concepts of point and interval estimation.
Estimators and their properties: bias, mean square error, relative efficiency, consistency, sufficiency, pivotal qualities.
Finding estimators by methods of maximum likelihood, moments and least squares.
Computer packages such as Minitab and SAS may be used.

Textbooks and References
To be advised

SM477 Queueing Theory and Simulation
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A second-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Queueing theory, simulation, applications to computers, inventory models and scheduling.

SM487 Queueing Theory and Simulation
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A second-year subject of the degree course in mathematics and computer science and applied and industrial mathematics.

Subject description
Queueing theory, simulation, applications to computers, inventory models and scheduling.

Computer packages such as Lotus 123/PROPS and SAS, SAS/OR may be used.

SM488 Financial Modelling
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A second-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Financial mathematics and models, replacement theory, corporate models, applications in banking.

Textbooks and References
Bell, A. (ed.) Introductory Accounting and Finance for Management. PMT and PI Accounting Departments, 1990

SM504 Project Management B
50.0 credit points
No. of hours per week: three hours
Assessment: examination, assignment

A third-year subject of the degree course in mathematics and computer science.

Subject description
Applied research/project management

Further topics in the theory and practice of project management: decision-making; types of decisions; how to make decisions.

Guest speakers from industry may be used. Tutorial classes are based on further experiential exercises in organisational behaviour following on from Project Management A.

Introduction to marketing

Students usually working in groups, prepare and present a marketing strategy for a nominated player in a specific market.

SM525 Operations Research
5
10.0 credit points
No. of hours per week: three hours
Assessment: examination, assignment

A third-year subject of the degree course in mathematics and computer science.

Subject description
Dynamic programming

Introduction to dynamic optimisation: recursive algorithm; computational procedures; forward and backward computations; stochastic problems; final value problems; infinite horizon problems; the problem of dimensionality; applications and case studies. Use of computer packages such as PROPS.
Advanced forecasting
The Box-Jenkins methodology, differencing of time series, sample autocorrelation and sample partial autocorrelation (SAC and SPAC), checking stationarity of time series using SAC and SPAC, autoregressive models; moving average models; general ARIMA models, autoregressive integrated moving average models (ARIMA). general ARIMA with seasonality, use of computer packages such as SASETS.

Decision analysis
Introduction to decision problems, deterministic decision problem vs stochastic single criterion decision tree analysis and related topics, financial comparisons of projects, multiple criteria decision methods. Use of computer packages such as PROPS and EC.

SM526 Applied Statistics 5
10.0 credit points
No. of hours per week: three hours
Assessment: tests examination and assignments

A third-year subject of the degree course in mathematics and computer science.

Subject description
Sampling methods for sample surveys
Basic designs for sample surveys: simple random sampling, stratified sampling and systematic sampling.
Estimators for means, totals and proportions; variance estimation. The design effect; sample size determination; EPSEM samples. Practical issues and methods: questionnaire design.

Introduction to multivariate methods
An informal introduction to sampling from multivariate populations. The variance-covariance matrix, the multivariate normal distribution, multi-variate means, Hotelling's statistic, the multivariate analysis of variance, Wilk's lambda. An introduction to principal components analysis and factor analysis and cluster analysis.

SM581 Discrete Mathematics
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM180
Assessment: tests examination and assignments

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Set theory and relations: review of formal set theory; operations on sets; ordered sets; Cartesian product.
Relations: binary relations, especially equivalence relations and partitions; ordering and partial ordering; functions.
Logic: introduction to propositional calculus and to predicate calculus; traditional and modern symbolic logic.
The nature of formal (pure) mathematics: mathematical proof and theorems; necessary and sufficient conditions; types of proof, including mathematical induction.
Boolean algebra: review of algebraic structures; rules of Boolean algebra, with examples; simplification of Boolean expressions. Boolean functions: truth tables and Karnaugh maps, normal and minimal forms.
Combinatorial analysis: systematic techniques of listing and of counting for arrangements, selections, partitions etc. Use of recurrence relations and series. Applications to selected problems. Use of generating functions.
Elementary number theory: division in integers; greatest common divisors; congruence; computer applications.

Selected applications of discrete mathematics (e.g. graph theory). Selective introduction to other areas of pure mathematics (e.g. abstract algebra).

Textbooks and References
Mathematics Department notes

SM584 Multivariate Statistical Methods
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM484
Assessment: tests examination and assignments

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Sampling from multivariate populations, the variance-covariance matrix, the multivariate normal distribution, multivariate means, Hotelling's statistic, the multivariate analysis of variance, Wilk's lambda.
An introduction to principal components analysis and factor analysis.
Classification methods: cluster analysis, linear discriminant analysis.
Multidimensional scaling
Computer packages such as Minitab and SAS may be used.

Textbooks and References

SM585 Sample Survey Design
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM484
Assessment: tests examination and assignments

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
The basic designs for sample surveys: simple random sampling, stratified sampling, systematic sampling and cluster sampling.
Estimators for the mean total and proportion for simple random samples and stratified samples; variance estimation for these two sample designs.
The design effect; sample size determination; EPSEM samples.
Ratio estimation; cluster sampling, multi-stage sampling, PPS sampling.
Practical issues and methods: questionnaire design; pilot surveys, mail, interviewer-based and telephone surveys; non-sampling errors; weighting.
References
Kalten, G. Introduction to Survey Sampling, Beverly Hills: Sage, 1983

SM587 Stochastic Models
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A third-year subject of the degree courses in mathematics
and computer science and applied and industrial
mathematics.

Subject description
Advanced queuing theory, simulation using dedicated
software, stochastic inventory models, stochastic dynamic
programming, stochastic scheduling models, game theory,
Markov processes, reliability theory.

Computer packages such as SASIOR, SIMAN, and Lotus
123/PROPS may be used.

Textbooks and References
Journal of the Operational Research Society

SM588 Industrial Applications of Operations Research
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A third-year subject of the degree courses in mathematics
and computer science and applied and industrial
mathematics.

Subject description
Production, scheduling, distribution, inventory control, and
transportation.

Computer packages such as SASIOR may be used.

Textbooks and References
Journal of the Operational Research Society

SM604 Industrial Research Project
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: group written and verbal reports

A fourth-year subject of the degree course in applied and industrial mathematics.

Subject description
This subject brings together in a student consultancy project techniques covered in the academic parts of the course together with personal and project management skills learnt in the project management subjects.

Students will work in groups on an industrial or research project. The projects will be selected from a variety of companies, government agencies, voluntary associations, etc. Each group will have a student leader plus a staff member as overall project leader. Final reports plus interim and final verbal presentations will be required. These may involve presentations at client companies. A project procedure document sets out the documentation and verbal reporting requirements.

Textbooks and References
Students will use such references as are appropriate to the particular project

SM608 Industry Based Learning
50.0 credit points
A six-month period of industry based learning occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SM609 Mathematics Project
7.5 credit points
No. of hours per week: three hours
Assessment: written reports and verbal presentation

Students work in groups on an industrial or research based project. On completion an verbal presentation and written report are given to the client organisation.

SM625 Operations Research 6
7.5 credit points
No. of hours per week: three hours
Assessment: assignment, examination, verbal presentation

A fourth-year subject of the degree course in mathematics and computer science. Alternative topics may be substituted for those below.

Subject description
Inventory control
Probabilistic models; re-order point models with stochastic demand; periodic review models with stochastic demand; single period models; dynamic inventory models; simulation approach; MRP approach; JIT inventory systems; computer packages; industrial applications.

Replacement theory
Relevant cost in replacement models; cost equation; discounted cash flow techniques; replacement of items that fail, mortality curves; conditional probability of failure; group replacement; cost of replacement; minimisation of costs; network solutions; other models.

Scheduling
The job-shop-process; classification of scheduling problems; measures for schedule evaluation; finite sequencing for a single machine; flow-shop scheduling; general n/m job-shop problems; applications; working with computer packages such as SAS/OR.
Seminar
Throughout the semester the students will be given the opportunity to present seminars and to participate in seminars presented by practitioners from business and industry.

Textbooks
Department of Mathematics notes

References
To be given by lecturers

SM626 Applied Statistics 6
7.5 credit points
No. of hours per week: three hours
Assessment: tests/ examination and assignments

A fourth-year subject of the degree course in mathematics and computer science.

Subject description
Sample Surveys
Ratio estimation, sampling, equal and unequal clusters, PPS
sampling, cluster homogeneity, weighting for non-response.

Topics in Applied Statistics
A selection of two or three topics will be made from a range of current statistical methods such as statistical quality control, multivariate statistics, econometric methods, non-parametric methods and design and analysis of experiments.

SM632 Social Change in the Modern World
5.0 credit points
No. of hours per week: three hours
Assessment: assignment, verbal presentation and media foliotreport

Subject description
The course will consider the rapid nature of technological and social change in modern industrial society, with particular stress on the consequences which this has for man and the environment. Aiming to introduce the student to some basic concepts in sociology, the focus will be on alterations which occur in patterns of culture, social structure and in attitudes and social behaviour.

Reference

SM684 Time Series Analysis
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM484
Assessment: tests/ examination and assignments

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description

Computer packages such as Minitab and SAS/ETS may be used.

Textbooks and References
To be advised

SM687 Applications of Modelling
10.0 credit points
No. of hours per week: three hours
Prerequisite: nil
Assessment: assignments and examination

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
A study of two or three areas of applications chosen according to the expertise available within the Department or from visiting staff. Topics will vary from year to year, with the emphasis being on the application area rather than particular techniques. Areas include sport, agriculture, environmental modelling, marketing, superannuation, social statistics, manufacturing, distribution, and artificial intelligence.

Textbooks and References
Journal of the Operational Research Society
To be advised

SM688 Mathematical Programming
10.0 credit points
No. of hours per week: three hours
Prerequisite: SM487
Assessment: assignments and examination

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Linear and integer programming, duality, parametric programming, non linear programming, geometric programming.

Computer packages such as SAS/OR may be used.

Textbooks and References
Journal of the Operational Research Society

SM689 Decision Analysis
10.0 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

A third-year subject of the degree courses in mathematics and computer science and applied and industrial mathematics.

Subject description
Decision making under uncertainty, utility theory, bayes rules and decision trees. Multiple objective decision making, goal programming, multi-criteria decision problems, multi-attribute utility theory, analytical hierarchy process, applications and packages, recent advances.

Computer packages such as EC(AHP packages) and Lotus 123/PROPS may be used.

References
Journal of the Operations Research Society
SM700  
**Reading Program**

12.5 credit points  
No formal hours  
Prerequisites: nil  
Instruction: individual supervision  
Assessment: submission of a literature survey report and a verbal examination of the material presented in the reading program. The examination panel will be composed of the minor thesis supervisor and one other academic staff member.

**Subject aims**  
To provide the appropriate reading material relevant to each student's proposed minor thesis topic.

**Subject description**  
A reading program relevant to the minor thesis topic. The reading program will vary from student to student depending on the topic of study.

**References**  

SM703  
**Stochastic Processes**

12.5 credit points  
No. of hours per week: four hours (total 56 hours)  
Prerequisites: nil  
Instruction: class teaching, workshops and computer laboratory sessions  
Assessment: assignments 50%, examination 50%

**Subject aims**  
To study stochastic processes and their methods of solution when applied to selected operations research topics.

**Subject description**  
Topics selected from random walks, branching processes, Markov chains, advanced queuing theory, simulation using dedicated software, stochastic inventory models, stochastic scheduling models, stochastic LP, stochastic dynamic programming.

**References**  

**Computer software**  
Lotus 123, SIMAN, SAS.

SM704  
**Mathematical Methods**

12.5 credit points  
No. of hours per week: four hours (total 56 hours)  
Prerequisites: nil  
Instruction: class teaching  
Assessment: assignments 30%, examination 70%

**Subject aims**  
To introduce some areas of modern mathematics and their application in numerical methods.

**Subject description**  
A selection of topics from real and functional analysis, linear algebra, complex variables.

**References**  
Hauser, A.A. Complex Variables with Applications. Simon and Schuster, 1971  

**Computer software**  
MATLAB

SM705  
**Computing Techniques and Packages**

12.5 credit points  
No. of hours per week: four hours (total 56 hours)  
Prerequisites: nil  
Instruction: class teaching, individual study program, workshops and computer laboratory sessions  
Assessment: assignments 50%, examination 50%

**Subject aim**  
To provide an in depth study of some computing languages and packages relevant to a student's course of study.

**Subject description**  
A selection of topics from C, Mathematica, Mathcad, SIR, SAS, SAS/GRAPH, SAS/IML, SAS/ETS, FIDAP, SIMAN, MATLAB or other relevant packages.

**References**  
Relevant manuals

SM706  
**Decision and Risk Analysis**

12.5 credit points  
No. of hours per week: four hours (total 56 hours)  
Prerequisites: nil  
Instruction: class teaching, workshops and computer laboratory sessions  
Assessment: assignments 50%, examination 50%

**Subject aim**  
To present students with statistical methods and tools used to assist decision making and risk management in industry.

**Subject description**  
Selection of topics from decision analysis, reliability theory, risk analysis and quality control.

**References**  
Frankel, EG. Systems Reliability and Risk Analysis. 2nd ed, Dordrecht: Kluwer, 1988  
Martz, HF. and Waller, RA. Bayesian Reliability Analysis. New York: Wiley, 1982  
Pewngor, M. Achieving Total Quality Management. Cambridge, M.A.:
SM707 **Differential Equations**
12.5 credit points  
No. of hours per week: **four hours** (total 56 hours)  
Prerequisites: nil  
**Subject aim**  
To develop an understanding of the theory of ordinary and partial differential equations, and a knowledge of analytical and computational methods of solutions.  
**Subject description**  
**References**  

SM708 **Industry Based Learning**
50.0 credit points  
A six-month period of industry based learning occurring as part of the fourth year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SM709 **Industrial Operations Management**
10.0 credit points  
No. of hours per week: **four hours**  
Prerequisites: nil  
**Subject aims**  
To provide a study of topics in operations research related to manufacture.  
**Subject description**  
A selection of topics from production, scheduling, distribution, inventory control, transportation.  
**References**  
Journal of the Operational Research Society  

Computer software  
SAS/OR, **SAS/OR, MATLAB**

SM710 **Advanced Mathematical Programming**
12.5 credit points  
No. of hours per week: **four hours** (total 56 hours)  
Prerequisites: nil  
**Instruction**: class teaching, workshops and computer laboratory sessions  
**Assessment**: assignments 30%, examination 70%  
**Subject aim**  
To introduce students to both the theoretical and computational aspects of mathematical programming.  
**Subject description**  
Topics selected from: basic convex analysis, minimization conditions, descent methods, Quasi-Newton methods, conjugate direction methods, Levenberg-Marquardt method, constrained minimization, parametric programming and sensitivity, integer programming, interior point and related methods, geometric programming, quadratic programming, separable problems in NLP, non smooth techniques, goal programming.  
**References**  

SM711 **Research Project**
12.5 credit points for the first semester  
25.0 credit points for the second semester  
No formal hours  
Prerequisites: nil  
**Instruction**: individual supervision  
**Assessment**: students will submit written half semester reports to the supervisor, a written minor thesis (15,000 words) 70%, a verbal examination 20%, a seminar presentation to staff and students 10%. Based on the above a grade and score will be awarded by the subject panel.

**Subject aim**  
To define, plan and carry out a research or industrial project. Submit a minor thesis.  
**Subject description**  
Content will vary from student to student depending on the particular project undertaken.  
**Reference**  

SM732 **Survey Research Methods**
12.5 credit points  
No. of hours per week: **four hours**  
Prerequisites: SM750, SM751  
**Subject aim**  
A subject of the Graduate Certificate and Diploma of Applied Science (Social Statistics).
This subject aims to identify and understand some of the methodologies used in survey research. It includes an overview of the procedures used in survey research, a descriptive approach to methods of sampling and data collection methods including questionnaire design and interview techniques (personal and telephone) mail surveys and census methods. Basic techniques to analyse survey data such as construction of indices and scales. Other topics may include data processing including editing, coding, quality control and preliminary analysis and analysis of multiple response questions.

Textbooks and References
Given in class

SM733 Demographic Techniques
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM742
A subject of the Graduate Diploma of Applied Science (Social Statistics).

Subject aims and description
This subject aims to give an understanding of the basic methods of demographic analysis and to develop an awareness of the social implications of demographic data. It will include topics chosen from the following: sources of demographic data. Elementary rates and ratios, examples from mortality, fertility, marriage and migration. Census data and use of CD ROM technology such as CDATA91. The Life table and use in predictions such as population projections. Models for regional demographic analysis.

Textbooks and References
To be advised

SM735 Survey Sampling
12.5 credit points
No. of hours per week: four hours
A subject of the Graduate Diploma of Applied Science (Social Statistics).

Subject aims and description
This subject aims to introduce the theory and practice of sampling methods for social surveys. The emphasis is on basic sampling methods such as simple random sampling, stratified sampling and cluster sampling, and includes the estimation of standard errors.

Textbooks and References
To be advised

SM742 Elementary Statistical Modelling
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM750, SM751
A subject of the Graduate Certificate and Diploma of Applied Science (Social Statistics).

Subject aims description
This subject aims to extend the work done in Introduction to Data Analysis by further developing the concepts of statistical estimation and testing. Topics will include analysis of variance and regression. Introduction to linear algebra. Introduction to multiple regression. Analysis of categorical data.

Textbooks and References
To be advised

SM743 Multivariate Statistics 1
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM742
A subject of the Graduate Diploma of Applied Science (Social Statistics).

Subject aims description
This subject aims to identify and apply the multivariate techniques most commonly used in social research and to understand the assumptions underlying their use. The course will include a selection of topics chosen from multiple regression, statistical inference for multivariate data, principal component analysis, factor analysis, discriminant analysis and cluster analysis.

Textbooks and References
To be advised

SM744 Statistical Modelling
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM743
A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
This subject aims to make an in-depth study of several statistical modelling techniques for both categorical and higher level data. Topics will be chosen from: regression models for categorical data: log-linear models including logistic regression for analysing binary data, procedures for analysing two way tables such as social mobility tables and multi-way contingency tables. Causal modelling, structural equation models, LISREL.

Textbooks and References
To be advised

SM745 Project Planning
12.5 credit points
No. of hours per week: four hours
Prerequisites: requirements of the Graduate Diploma in Social Statistics with at least two distinctions in the second year
A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
In this subject students define and plan a project and conduct an extensive literature search. The content will vary from student to student depending on the work undertaken. If will involve selecting an appropriate project and conducting an extensive literature search.

Textbooks and References
To be advised

SM746 Multivariate Statistics 2
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM743
A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
This subject aims to make an in-depth study of a range of multivariate techniques used in social research. A selection of topics will be made from multivariate analysis of variance, multiple regression, factor analysis, discriminant analysis, cluster analysis, conjoint analysis, correspondence analysis and scaling techniques such as multi-dimensional scaling.

Textbooks and References
To be advised
SM747 Secondary Data Analysis
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM733

A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
This subject aims to develop the ability to explore complex datasets with a view to formulate policy decisions. Starting with existing datasets investigate policy formulation problems making use of the techniques learnt elsewhere in the course.

Textbooks and References
To be advised

SM748 Research Methodology
12.5 credit points
No. of hours per week: four hours
Prerequisite: SM745

A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
This subject aims to continue the project planning in SM745 by selecting the appropriate research methodology necessary to proceed and, if necessary, develop additional skills needed to complete the research. The content will vary from student to student depending on the project undertaken.

Textbooks and References
Depends on topic

SM749 Minor Thesis
25.0 credit points
No. of hours per week: eight hours
Prerequisite: SM748

A subject of the Master of Applied Science (Social Statistics) by coursework.

Subject aims and description
This subject follows on from SM748 and aims to carry out an original piece of social research and report the findings.

Textbooks and References
Depends on topic

SM750 Basic Statistical Computing
12.5 credit points
No. of hours per week: four hours
Prerequisites: nil
Instruction: computer laboratory sessions and classroom lectures
Assessment: computer tests and assignments

Subject aims
This subject aims to develop competence in the use of personal computers and associated statistical packages and to acquire a level of statistical computing literacy necessary for data analysis in the health sciences.

Subject description
This subject will include an introduction to microcomputers, a mainstream statistical package such as SPSS and a mainstream spreadsheet such as Lotus123 or Excel. It will also include a package specific to the health sciences such as Epi Info.

References

Department of Mathematics notes
Norusis, M. SPSS/PC+ Studentware Plus. Chicago: SPSS Inc. User Guides for the packages used

SM751 An Introduction to Data Analysis
12.5 credit points
No. of hours per week: four hours
Prerequisites: nil
Instruction: audio visual presentations and laboratory sessions using computers and calculators
Assessment: practical and theoretical tests

Subject aims
This subject aims to provide a computer based introduction to the concepts and practice of data analysis, statistical estimation and hypothesis testing.

Subject description
This subject will include the following topics: Exploring data, describing and summarising data, variability, levels of measurement, time series, drawing inferences from sample data, confidence intervals and testing hypotheses on means and proportions for two groups, Chi square and t-tests. Determination of sample size. Use of demographic and health data. Use of statistical packages such as Minitab and SPSS as appropriate.

References

SM752 Advanced Statistical Computing
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM750, SM751
Assessment: mixture of practical assignments and tests

A subject of the Graduate Diploma of Applied Science (Social Statistics).

Subject description
This subject aims to expand the work done in Basic Statistical Computing by introducing the students to other aspects of statistical computing, in particular the SAS system. It will look at various modules of the SAS System such as Base SAS, STAT, SAS/GRAPH, as well as requiring the students to investigate the use of higher level statistical procedures using as appropriate data set. Interfaces between other packages and SAS will also be covered.

Students will be given the opportunity to work with their own data.

Textbooks and References
Will be supplied by the lecturer

SM753 Survey Methods
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM751 and SM750
Instruction: class teaching and workshops supplemented by audio-visual presentations and computer laboratory sessions
Assessment: assignments and a test
Subject aim
This subject aims to describe and understand some of the methodologies used in survey research carried out in the health sciences.

Subject description
The subject will include an introduction to:
(i) data collection methods including questionnaire design, interview techniques (personal and telephone), mail surveys and census methods;
(ii) sampling methods and obtaining estimates of sampling errors. Overview of basic probability methods such as simple random sampling, stratified sampling, cluster sampling and multi-stage sampling. Determination of sample size;
(iii) basic techniques to analyse survey data such as construction of indices and scales. Examples will be drawn from areas such as health sciences, sociology, psychology, economics and marketing.

References

SM754 Introduction to Health Statistics
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM751 and SM750
Instruction: class teaching and workshops supplemented by audio-visual presentations and computer laboratory sessions
Assessment: practical and theoretical tests

Subject aims
This subject aims to introduce students to statistical measures and techniques which are specifically relevant to the health sciences and to enable them to make reasoned conclusions from the measures.

Subject description
This subject will include a descriptive study of the following:
(i) demographic disease measures including birth and death rates, fertility rates, infant mortality rates;
(ii) rates and risks including prevalence, incidence, cumulative incidence, point and period prevalence, person-time rates, age-standardised rates and standardised mortality rates;
(iii) measures of association including risk differences, risk ratios, rate differences and rate ratios, odds ratios, attributable risks, population attributable risks;
(iv) an introduction to epidemiological methods.

References
Christie, D., Gordon, I. and Heller, R. Epidemiology — An Introductory Text for Medical and Other Health Science Students UNSW Press: Sydney, 1987

SM755 Demographic Techniques
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM754
Instruction: class teaching and computer laboratory sessions
Assessment: assignments and a test

Subject aims
This subject aims to understand the basic methods of demographic analysis and to develop an awareness of the social implications of demographic data.

Subject description
This unit will build on the work done in Introduction to Health Statistics.
Topics will include sources of demographic data, further work on rates and ratios, with examples from mortality, fertility, marriage and migration. Census data and use of CD-ROM technology such as CDATA91. Introduction to survival analysis, life tables and life expectancy, and their use in predictions such as population projections. Survival curves, the log-rank test, proportional hazards model.

Much of the analysis will be done using a suitable spreadsheet package such as Excel or Lotus 123.

References
Australian Bureau of Statistics, Social Indicators. Number 5, Canberra: AGPS Catalogue No. 1101.0, 1992

SM756 Elementary Statistical Modelling
12.5 credit points
No. of hours per week: four hours
Prerequisites: SM751 and SM750
Instruction: class teaching and workshops supplemented by audio-visual presentations and laboratory sessions
Assessment: practical and theoretical tests

Subject aims
This subject aims to extend the work done in Introduction to Data Analysis by further developing the concepts of statistical estimation and testing.

Subject description

References

Computer Packages
Epi Info V5 (1992)
SPSSPC+, Version 5.1 (1991) and/or SPSS for Windows (1992)
**SM757  Epidemiological Methods**

12.5 credit points

No. of hours per week: four hours

Prerequisites: SM755 and SM756

Instruction: class teaching and laboratory sessions

Assessment: assignments and a test

**Subject aims**

This subject aims to develop critical skills in the evaluation of the health and medical literature involving epidemiology with an emphasis on statistical and methodological analysis.

**Subject description**

(i) Epidemiological study designs: descriptive and analytical studies, observational versus experimental designs, cross-sectional surveys, cohort and case-control studies, clinical trials and intervention studies. Determination of sample size.

(ii) Confounding: identifying potential confounding: stratification and adjusted estimates, regression and multivariate adjustment, matching.

(iii) Diagnostic texts: repeatability and validity of tests for disease, sensitivity and specificity of tests, predictive value and prevalence. Bayes' theorem.

(iv) Screening for disease: reasons for screening, requirements for screening, prevalent and incident cases, quality of screening test.

**References**


**Computer packages**

Epi Info V5+ (1992)

SPSS for Windows (1992)

EGRET (1992)

**SM758  Analysis of Risks and Rates**

12.5 credit points

No. of hours per week: four hours

Prerequisites: SM755 and SM756

Instruction: class teaching and computer laboratory sessions

Assessment: assignments and a test

**Subject aims**

This subject aims to develop critical skills in the evaluation of health and medical literature on risks and rates with an emphasis on statistical and methodological analysis.

**Subject description**

(i) A n a l y s i s of risks: the binomial distribution, risk estimates, confidence intervals for proportions, risk differences, t-test and chi-square test, confidence interval for a differene, risk ratios, odds ratios, confidence interval for an odds ratio. Logistic regression. Determination of sample size.


**References**


**Computer packages**

Epi Info V5+ (1992)

EGRET (1992)

**SM1200  Mathematics 1**

10.0 credit points per semester

No. of hours per week: four hours for two semesters

Assessment: tests/examinations and assignments

A first-year subject of the degree course in computing and instrumentation.

**Subject description**

Vectors

Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Numerical calculations

Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by graphical and iterative methods.

Elementary combinatorial analysis; counting selections and arrangements.

Plane analytic geometry

Co-ordinate geometry in Cartesian co-ordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Functions of one variable

Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus

Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Applications of differentiation: graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L'Hôpital's rule.

Integration: definite and indefinite integrals and their interpretations; integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.

Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change.

2D polar co-ordinates

Definitions: Graphs of equations; transformation to and from Cartesian co-ordinates.

Complex numbers

Definition and arithmetic: polar form; de Moivre's theorem and exponential notation.

Ordinary differential equations


Vector functions

Calculus of vector functions of one variable with application to displacement, velocity and acceleration and to mechanics. Equations to lines and planes, gradient of a scalar field, directional derivative.
Functions of many variables

Partial differentiation and applications: differentials and approximations; optimisation and applications (including least squares) with first and second derivative tests.

Data presentation and analysis

Frequency distributions: tabulation; graphical presentation; measures of central tendency and of dispersion; measures of association.

Probability

Definitions and concepts of probability: calculation using addition and product-rules; conditional probability and independence.

Probability distributions; discrete variates, including binomial, Poisson and hypergeometric distributions; continuous variates, including normal distribution; mean and variance. Introduction to hypothesis tests and confidence intervals for means and correlation coefficients using the t distribution.

Textbooks


Prescribed Calculator:

Texas Instruments Advanced Scientific TI-81 Graphics Calculator

SM1208 Mathematics

10.0 credit points in semester one and 8.0 credit points in semester two

No. of hours per week: five hours in semester one and four hours in semester two

Assessment: tests, examination and assignments

A first-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.

Subject description

Vectors

Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Numerical calculations


Plane analytic geometry

Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Functions of one variable

Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus

Differentiation; geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Applications of differentiation; graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L'Hôpital's rule.

Integration: definite and indefinite integrals and their interpretations; integrals of standard functions: integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.

Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change.

Linear algebra

Matrices, determinants and the solution of systems of linear equations.

First order differential equations

The solution of separable first order differential equations with applications.

Functions of several variables

Partial differentiation; differentials and approximations; an introduction to optimisation.

Descriptive statistics

Numerical and graphical methods for summarising and presenting data. Cross-tabulation.

The MINITAB computer package is used in the statistical studies.

Probability

Probability and probability distributions such as binomial, Poisson and normal.

Inferential statistics

Hypothesis tests and confidence intervals for means, proportions and variances using the t, chi-square and F distributions.

Regression and correlation

Scatterplots, the Pearson correlation coefficient, and linear least squares regression for one predictor. Applications to analytical chemistry.

Textbooks


Prescribed calculator

Texas Instruments Advanced Scientific TI-81 Graphics Calculator

SM1210 Mathematics

12.5 credit points in semester one and 7.5 credit points in semester two

No. of hours per week: five hours in semester one and three hours in semester two

Assessment: tests, examinations and assignments

A first-year subject of the degree courses in mathematics and computer science and software engineering.

Subject description

Analytic geometry

Vectors in 2- and 3-dimensional space: dot and cross products, and resolution. Plane coordinate geometry.

Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Numerical calculations


Functions of one variable

Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus

Differentiation; geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Applications of differentiation; graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L'Hôpital's rule.

Integration: definite and indefinite integrals and their interpretations; integrals of standard functions: integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.

Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change.
Matrix algebra
Matrices and matrix algebra: determinants. Systems of linear equations: Cramer’s rule; Jordan and Gaussian elimination; matrix inversion; procedures for numerical solution by direct and iterative methods.

2D polar coordinates
Definitions: graphs of equations; transformation to and from Cartesian coordinates; curve length and area.

Differential equations
Ordinary differential equations of first order: general and particular solutions; separable and linear types.

Vectors and geometry
2D vectors: dot product and resolution; parametric equations of 2D curves; vector differentiation.

3D space: Cartesian and polar coordinates; simple surfaces and curves in space.

3D vectors: dot and cross-products; vector equations of lines and planes; parametric equations of 3D curves.

Functions of many variables
Graphs of surfaces as functions of two or three variables; partial differentiation and applications; directional derivatives and gradients; tangent planes to surfaces; differentials and approximations; optimisation and applications.

Complex numbers
Complex numbers: definition and arithmetic; polar form; exponential notation. Solution of polynomial equations.

Textbook

Prescribed calculator
Texas Instruments Advanced Scientific TI-81 Graphics Calculator

SM1215 Mathematical Methods
10.0 credit points per semester
No. of hours per week: four hours
Assessment: tests/examination and assignments

A first-year subject of the degree course in medical biophysics and instrumentation.

Subject description
Vectors
Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Numerical calculations
Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by graphical and iterative methods.

Elementary combinatorial analysis; counting selections and arrangements.

Plane analytic geometry
Co-ordinate geometry in Cartesian co-ordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Functions of one variable
Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product quotient and chain rules; implicit differentiation.

Applications of differentiation: graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L’Hôpital’s rule.

Integration: definite and indefinite integrals and their interpretations; integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration.

Applications of integration: areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change.

2D polar co-ordinates
Definitions: Graphs of equations; transformation to and from Cartesian co-ordinates.

Complex numbers
Definition and arithmetic; polar form; de Moivre’s theorem and exponential notation.

Ordinary differential equations

Vector functions
Calculus of vector functions of one variable with application to displacement, velocity and acceleration and to mechanics. Equations to lines and planes, gradient of a scalar field, directional derivative.

Functions of many variables
Partial differentiation and applications: differentials and approximations; optimisation and applications (including least squares) with first and second derivative tests.

Data presentation and analysis
Frequency distributions: tabulation; graphical presentation; measures of central tendency and of dispersion; measures of association.

Probability
Definitions and concepts of probability: calculation using addition and product rules; conditional probability and independence.

Probability distributions: discrete variates, including binomial, Poisson and hypergeometric distributions; continuous variates, including normal distribution; mean and variance. Introduction to hypothesis tests and confidence intervals for means and correlation coefficients using the t distribution.

Textbooks

Prescribed calculator
Texas Instruments Advanced Scientific TI-81 Graphics Calculator

SM2100 Applied Statistics
8.0 credit points
No. of hours per week: three hours
Assessment: tests/examination and assignments

A first-year subject of the degree course in environmental health.

Subject description
Introduction to health statistics: morbidity and mortality, vital statistics, standardisation, life tables.

Probability: concepts and basic formulas. Probability distributions: discrete, including binomial and Poisson; continuous, including normal. Sampling distributions of mean, variance and proportion.

Estimation of means, variances and proportions from single samples. Tests of hypotheses in means, variances and proportions; comparisons of two groups and of several groups (analysis of variance). Introduction to experimental design. Chi-squared tests on goodness of fit.

Correlation and regression. Selected non-parametric methods.

Introduction to epidemiology: types of study; measures of risk and of association.
SM3400 Mathematical Methods
8.0 credit points per semester
No. of hours per week: three hours
Prerequisite: SM1200 or SM1215
Assessment: tests/examinations and assignments

A second-year subject of the degree course in instrumentation and computer science.

Subject description
Linear algebra and vectors.
Matrices and matrix algebra. Systems of linear equations; Gaussian elimination; procedures for numerical solution by direct or iterative methods, (Jacobi and Gauss-Seidel), transformation matrices.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Space curves, Serret-Frenet formulas. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field. Line, surface and volume integrals. Field theory.

Complex analysis

Random processes

Modern algebra with applications

Prescribed text
Semesters 1 and 2
Semester 2 only

SP106 Physics
10.0 credit points
No. of hours per week: five hours
Assessment: practical work, assignments and examination

A first-year subject of the degree courses in applied science (computer-aided chemistry, computer-aided biochemistry).

Subject description
Motion and forces: relativistic kinematics and dynamics, rotational kinematics and dynamics, gravitation.
Electricity and magnetism: electric fields, Gauss' Law, electric potential, energy density of the electric field, magnetic fields, Biot-Savart Law, Ampere's Law, inductance, AC circuits, displacement current, DC circuits.
Atomic physics: photoelectric effect, x-rays, Compton effect, photon-electron interactions, Bohr model, de Broglie matter waves.

SM3415 Mathematical Methods
8.0 credit points for semesters one and two
No. of hours per week: three hours
Prerequisite: SM1200 or SM1215
Assessment: tests/examinations and assignments

A second-year subject of the degree course in instrumentation and computer science.

Subject description
Linear algebra and vector;
Matrices and matrix algebra. Systems of linear equations; Gaussian elimination; procedures for numerical solution by direct or iterative methods, (Jacobi and Gauss-Seidel), transformation matrices.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Space curves, Serret-Frenet formulas. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field. Line, surface and volume integrals. Field theory.

Complex analysis

Random processes

Modern algebra with applications

Prescribed text
Semesters 1 and 2
Semester 2 only

SP108 Physics
10.0 credit points
No. of hours per week: five hours
Assessment: practical work, assignments and examination

A first-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry taken by students who have not reached Year 12 physics standard.
Subject description
Forces and Energy: kinematics, linear and circular dynamics, gravitation, kinetic theory, heat.
Modern Physics: atomic structure, radioactivity, quantum theory, special relativity.
Electricity and Magnetism: magnetic and electric fields, Coulomb's Law, electromagnetic induction — Lenz and Faraday laws, DC/AC circuits.
Light and waves: reflection, refraction, interference, electromagnetic waves.

SP121 Physical Science
7.5 credit points
No. of hours per week: three hours
Assessment: assignments and examination
A first-year subject of the degree course in environmental health.

Subject description
Forces and energy: kinematics, Newton's Laws, work.
Matter: liquids — density, pressure, evaporation, buoyancy, surface tension, capillarity, Bernoulli's principle, viscosity.
Electricity and magnetism: charge, Coulomb's Law, electric field, potential difference, current, Ohm's Law, resistance, capacitance, magnets and magnetic fields, magnetic effects of currents, electromagnetic induction, Faraday's Law, Lenz's Law.
Acoustics: S.H.M., damped and forced vibrations, wave motion, energy in waves, standing waves, sound, beats, shock waves, intensity, sound levels, human ear, dBA scale, introduction to noise.

SP132 Introductory Rychophysiology
12.5 credit points
No. of hours per week: four hours
Assessment: examination, assignments and tutorials
A first-year subject for students majoring in psychophysiology.

Subject description
Physical concepts, units, principles, conversions, accuracy, measurements. Basic physical monitoring techniques including relevant quantitative measures, measurements and units.
Membranes and tissues, cell membrane, receptors, cell communication. Introduction to organ systems, methods of monitoring, physiological importance, aspects of control.
Nutrition, chemical basis, digestion, absorption, additives.
Genetics, phenotypes, genotypes, crosses, genetic engineering.
Immunological considerations, antibodies, lymphocytes, immunity, rejection.

SP135 Monitoring Instrumentation
10.0 credit points
No. of hours per week: three hours
Assessment: examination and assignments
A first-year subject for students majoring in psychophysiology.

Subject description
Numbers and measurement: introduction to measurement principles, errors and statistics. Graphical presentation of data.

Direct current electricity: DC voltage, current, resistance.
Power sources and sinks, Ohm's Law and circuit diagrams.
Mechanics: vector and scalar quantities. Forces, work and energy. Equilibrium, levers, and the physiological applications of

SP220 Instrumental Science 2
4.0 credit points
No. of hours per week: two hours for semester two
A first-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.

Subject description
Topics studied will include:
- further DC circuits;
- AC circuits;
- further optics — lenses, interference, diffraction etc.

SP221 Physical Science
8.0 credit points
No. of hours per week: three hours
Assessment: practical work and examination
A first-year subject of the degree course in environmental health.

Subject description
Radiation:
- electromagnetic spectrum — introductory physics of microwaves, UV, and electromagnetic radiation.
- atomic structure — H spectrum, H atom, X-rays, thermionic and photo-electric emission.
- nuclear structure — binding energy, radioactivity, nuclear reaction and nuclear-radiation, tracer techniques, radiation measurements. Dangers of radiation.
Optics and images: mirrors, lenses, optical instruments, light, intensity and luminous flux.
Lasers: basic principles and application to measurement of flow rate and particle density.
Transducers: mechanical and electrical devices with applications.

SP222 Industry Based learning
50.0 credit points
A six-month period of work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Medical Biophysics and Instrumentation). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SP231 Monitoring Technology
10.0 credit points
No. of hours per week: three hours
Assessment: examination and assignments
A first-year subject for students completing the psychophysiology major in applied science.

Subject description
Wave Theory: standing waves, transmission, Doppler shift, ultrasound.
Amplification, filtering, differential amplifying (black box concept only).
The electrode as a transducer: capacitance, resistance, impedance, biological signal properties.
Mensuration: Wheatstone bridge, chart recorders, frequency counter.
Other transducers: blood flow, pressure, temperature (differential for bio-feedback use), position, movement, timing.
SP233  Psychophysiological Concepts
19.0 credit points
No. of hours per week: eight hours
Prerequisite: SP132 Introductory Psychophysiology
Assessment: examination, assignments, tutorials and laboratory reports

A first-year subject for students majoring in psychophysiology.

**Subject description**
Basic monitoring instrumentation, recorders, plotters, displays.
Basic monitoring technology, amplifiers, filters, gain frequency response.
Nerve and muscle physiology and associated monitoring techniques.
Heart and cardiovascular physiology with associated monitoring techniques.
Respiratory system with associated monitoring methods and instruments.
Biofeedback systems and psychophysiological correlates.

SP320  Instrumental Science 3
6.0 credit points
No. of hours per week: three hours
Prerequisite: SP220
Assessment: examination and laboratory reports

A second-year subject of the degree course in computer-aided chemistry.

**Subject description**
Topics studied will include:
- basic analogue electronics using operational amplifiers and discrete devices;
- basic digital circuits — combinational logic, flip flops and their uses.

SP324  Biophysical Systems A
10.0 credit points
No. of hours per week: four hours
Prerequisite: SP1224 or equivalent
Assessment: examination, assignments and laboratory reports

A second-year subject for students majoring in medical biophysics.

**Subject description**
Electrode processes: half cell potentials, charge transfer overpotential, diffusion overpotential, impedance, microelectrodes, recording arrangements.

SP325  Biophysical Systems B
10.0 credit points
No. of hours per week: four hours
Prerequisite: SP1224
Assessment: examination, assignments and laboratory reports

A second-year subject for students majoring in medical biophysics.

**Subject description**
Muscle: ultrastructure, excitation-contraction-coupling, sliding filament theory, length-tension relationships, Hill equation, metabolic aspects, EC coupling in smooth muscle, pathophysiology of muscle, electromyography.
The heart: cardiac cycle, mechanical and electrical events, Starling's law and Noble's model, mechanical properties of cardiac muscle.
Pulsatile pressure and flow in arteries, wave propagation in arteries, blood rheology, atherosclerosis, Starling's hypothesis of the capillary system, mass transport, flow in collapsible tubes, blood flow in particular organs, Guyton's model. Control of blood flow in the brain.

SP331  Neurohumoral Bases of Psychophysiology
23.5 credit points
No. of hours per week: eight hours
Prerequisite: SP232
Assessment: examination and assignments

A second-year subject for students completing the psychophysiology major.

**Subject description**
Neuropsychological recording techniques: basic instrumentation, EEG recording, electrode technology. Hormonal and pharmacological bases of normal body function including biorhythms.
Olfactory and taste physiology.
Somatosensory physiology and recording techniques.

SP333  Industry Based Learning
50.0 credit points

A six-month period of work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Medical Biophysics and Instrumentation). Students are supervised by a member of the academic staff, and are required to submit a report to their employer and to their supervisor.

SP401  Experimental Techniques
4.0 credit points
No. of hours per week: two hours
Assessment: assignments and examinations.

A second-year subject for students majoring in medical biophysics and instrumentation.

**Subject description**
Earthing and shielding: reduction of noise and interference.
Electrical safety: Australian Standards for biomedical circuits.
Treatment of biophysical data: biological statistics and data presentation, use of personal computers in biomedical practice, utility packages physiological data acquisition and signal processing packages. Applications of mathematical models of physiological systems to experimental work, numerical methods in biophysics.
Nuclear studies: radiation safety, dosimetry, radiopharmaceuticals in clinical practice.

SP420  Instrumental Science 4
6.0 credit points
No. of hours per week: three hours
Prerequisite: SP320
Assessment: examination and laboratory reports

A second-year subject of the degree course in computer-aided chemistry.

**Subject description**
Topics studied will include:
- digital to analogue and analogue to digital converters;
- the organisation of a computer, especially input/output;
- hardware and software aspects of parallel interfacing;
- hardware and software aspects of serial interfacing;
- hardware and software aspects of analogue interfacing.
Clinical Monitoring A
8.0 credit points
No. of hours per week: four hours
Prerequisite: SP324 or SP325
Assessment: examination, assignments and laboratory reports

A second-year subject for students majoring in medical biophysics and instrumentation.

Subject description
Cardiac monitoring and pathologies.
The ECG: genesis of myocardial field, lead systems, vectorcardiography, ECG changes in disease; effects of heart position, arrhythmias and conduction defects, pacemakers and defibrillators.
Monitoring pressure and flow: Swan-Ganz catheters, ultrasonic and electromagnetic flowmeters, non-invasive techniques, cardiac output by dye and thermal dilution, electrical impedance method, phono- and echo-cardiography.
Neurophysiological monitoring: on-going brain electrical activity, visual, auditory and somatosensory evoked responses; the EFG, EEG.
Intensive care instrumentation: design philosophies, data processing and management; ambulatory monitoring and telemetry. Cardiopulmonary bypass, requirements and design.

Clinical Monitoring B
8.0 credit points
No. of hours per week: four hours
Prerequisite: SP324 or SP325
Assessment: examination, assignments and laboratory reports

A second-year subject for students majoring in medical biophysics and instrumentation.

Subject description
Respiratory system: structure and function, lung volumes and dead space, diffusion, blood flow; ventilation/perfusion ratio inequality; gas transport. Bohr and Haldane effects, acid-base status, respiratory mechanics, control of respiration.
Lung function testing and lung diseases, obstruction, restriction: flow/volume curves, diffusion capacity, compliance, body plethysmography, response to exercise, small airway assessment, ventilation/perfusion ratio.
Renal vasculature: the juxtaglomerular apparatus, kidney function tests, countercurrent multiplication, control of kidney function, renal pathophysiology, the artificial kidney.
Monitoring the birth process: maternal, foetal and neo-natal monitoring; uterine activity, foetal heart rate, Apgar scoring; neo-natal circulatory and respiratory changes.
Anaesthesia: agents and their administration; monitoring; physiological effects of anaesthesia, mathematical modelling.

Psychophysiology of Perception
17.0 credit points
No. of hours per week: eight hours
Prerequisites: SP232, SP331
Instruction: lectures, tutorials, laboratory work and project consultation
Assessment: examination and assignments

A second-year subject for students majoring in psychophysiology.

Subject aims
To provide a knowledge of the physiology of peripheral and central mechanisms of perception.
To provide a knowledge of psychophysics and measurement.

Subject description
Vision: the eye, peripheral mechanisms, central pathways and processing.
Auditory and vestibular: the ear, mechanisms of sound and vibration transduction, signalling balance, central pathways and processing.
Somatosensory: reception mechanisms, peripheral and central pathways, pain control.
Motor responses: central and peripheral control of movement; integration of sensation with motor response; RT, MT, practical aspects related to skill learning, ergonomics, and psychophysics.

Textbook

References
Others as advised by lecturers

Signals and Systems
8.0 credit points
No. of hours per week: four hours
Assessment: examination

A fourth-year subject of the degree course for students majoring in instrumentation.

Subject description
Signals in time and frequency domains: measurement and interpretation of spectra, applications of Fourier analysis.
Linear systems: time invariance, impulse response, system function, causality, system testing, phase and amplitude responses and time delays, filters.
Digital processing: signal sampling and reconstruction, digital spectral analysis, DFT and FFT, digital filters, linear prediction and bandwidth compression.
Noise: averages, signal estimation and detection.
Image processing: Fourier optics, holography and tomography.

Physics
6.0 credit points
No. of hours per week: two hours
Assessment: practical work and examination

A fourth-year subject of the degree course in medical biophysics and instrumentation.

Subject description
Solid state physics: tunnel diodes, PN photodiodes, PIN photodiodes, PN diodes to detect protons and alpha particles, PN diodes to detect gamma radiation, superconductivity, superconducting quantum interference devices.

Scientific Instrumentation A
10.0 credit points
No. of hours per week: four hours
Prerequisite: SP3410
Assessment: examination, assignments and laboratory reports

A fourth-year subject of the degree courses for students majoring in instrumentation.

Subject description
Lectures on a series of topical aspects of scientific instrumentation.
A series of three hour experiments in a) networking computers and instruments together; and b) principles and applications of optical instruments. Experiments in networking computers and instruments together to achieve instrument function: optical instrumentation and imagery.

SP523  Industry Based Learning  
50.0 credit points  
A six-month period of industry based learning occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computing and Instrumentation). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SP524  Biophysics (Neurosciences A)  
8.0 credit points  
No. of hours per week: four hours  
Prerequisites: SP524 and either SP424 or SP425  
Assessment: examination, assignments and practical work  
A fourth-year subject of the degree course for students majoring in medical biophysics and instrumentation.

Subject description  
Receptor functions: information theory, channel capacity, information transmission, frequency coding, thresholds, receptive fields, generator potential.  
Biophysics of peripheral sensory systems: peripheral receptors, histology, function, CNS connections, spinal cord mechanisms, spinal afferent pathways — lemniscal and anterolateral, thalamic organisation and projections, S1 and S11 somatosensory cortex, dysfunction, testing — SEP.  
Pain, spinal and brainstem pathways, endogenous opiates, gating theory, analgesia — TENS, electrical stimulation, pharmacological interactions.  
Psychophysics: scaling, assessment techniques, absolute and difference thresholds, Weber function, just noticeable difference, Fechner compression, signal detection, ROC curves.  
Motor control: peripheral mechanisms, gamma loop, coactivation, stiffness regulation, servo mechanisms, motor cortex, motor potential, control circuits to basal ganglia and cerebellum, spinal pathways, pathology, skilled movement, learning, open and closed loop operation.

SP525  Applied Biophysics A  
8.0 credit points  
No. of hours per week: four hours  
Prerequisites: SM3415, SP325 and either SP424 or SP425  
Assessment: examination and laboratory reports  
A fourth-year subject for students majoring in medical biophysics and instrumentation.

Subject description  
Physiological control systems: control theory, signal flow diagrams, fundamental block representations, open-loop gain.  
Dynamic responses: Bode and Nyquist analysis, transfer function discovery — examples of physiological investigations.  
Cardiovascular system, mathematical models of the arterial system, Respiratory, acid/base and thermal control, modelling of peripheral neuro muscular control.  
Multicompartment systems and methods of analysis, models of membrane systems, channel statistics.  
Modelling of endocrine systems.  
Volume conductor theory; application to EEG. Neurovolume conductors, modelling models of brain electrical and magnetic activity.  
Introduction to neural net modelling.

SP527  Neurophysiology of the Normal Brain  
12.5 credit points  
No. of hours per week: five hours  
Prerequisite: SP431  
Instruction: lectures, tutorials, seminars and project consultation  
Assessment: examination and assignments  
A third-year subject for students majoring in psychophysiology.

Subject aims  
To provide a knowledge of the physiological and behavioural processes underlying normal sleep, dreaming, memory, and disorders of these states.

Subject description  
Memory: neuronal theories of consciousness, neuronal plasticity, distributed memory system.  
Consciousness: theories of consciousness, interaction with sleep states.  
Sleep and dreaming: stages of sleep, desynchronisation of EEG activity, functional models of sleep, sleep monitoring, sleep disorders.  
Textbook  

References  
As advised by lecturers

SP528  Higher Cortical Functions  
12.5 credit points  
No. of hours per week: five hours  
Prerequisite: SP431  
Assessment: examination, assignments and seminar presentation  
A third-year subject for students majoring in psychophysiology.

Subject description  
Neurophysiological mechanisms of attention; electrophysiological correlates of attention, disorders of attention, models of attention, psychophysiological and behavioural assessment, disorders of attention.  
Neurophysiological basis of purposive behaviour; vigilance, disorders of purposive behaviour; amotivational states, obsessive-compulsive disorder. Tourette's syndrome.  
Psychophysiological and behavioural measures.  
Consciousness and awareness: the mind-body problem, artificial "intelligence".  
Neuronal mechanisms of sexual behaviour.  
Neurophysiological basis of speech and language; origins of speech and language, neurophysiological models for language, language disorders; assessment of aphasia, apraxia, aphasias, neurodevelopment and language, role of left and right hemisphere, recognition of facial expression, prefrontal contributions, gender and language, memory and language.
SP530 **Scientific Instrumentation B**  
10.0 credit points  
No. of hours per week: four hours  
Prerequisite: SP430  
Assessment: examination, assignments and laboratory reports  
A fourth-year subject for students majoring in instrumentation.  
**Subject description**  
Nuclear instrumentation: semiconductor detectors, computer based spectrometry, activation analysis and coincidence counting.

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SP531 **Biophysical Systems and Techniques**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: continuous, by tests and assignments  
An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.  
**Subject description**  
Physiological control mechanisms, mathematical models of physiological systems.

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SP532 **Clinical Monitoring Techniques**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: continuous, by tests and assignments  
An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.  
**Subject description**  
Physical and physiological principles in the use and development of clinical monitoring systems including biological sensors and the processing, display and storage of data. Main emphasis is placed on cardiovascular and respiratory monitoring, but novel techniques in other areas of biomedical monitoring will be covered.

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SP534 **Neurophysiological Techniques**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: lectures, laboratory exercises and tutorials  
Assessment: assignments  
An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.

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SP535 **Biomedical Project**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: continuous, by tests and assignments  
A compulsory subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science.  
**Subject description**  
Tutorials in analogue and digital electronic application techniques.  
The development, construction and commissioning of a biomedical instrumentation system.

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SP537 **Medical imaging**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: assignments and tests  
An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.  
**Subject description**  
Interrogation methods: beamed radiation (visible, IR, Microwave, X-ray, Ultrasound), internally deposited radiation (gamma rays, SPECT, PETT), selective excitation (NMR). Physical qualifies of tissue measured by the interrogation.  
Image construction methods: real-time ultrasound, interactive and filtered back-projection methods in tomography, algorithms and software implementation.  
Image enhancement methods: colour coding, edge detection, noise reduction, digital subtraction, entropy methods.  
Interpretation of images: image quality and contrast, system MTFs, ROC curves, information theory.

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SP541 **Signal Processing**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: assignments  
An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.  
**Subject description**  
(1) Linear and non-linear systems, response functions.  
(2) Signals, spectra, mean square estimation, orthogonality, probability, stationary and non-stationary stochastic processes.
(3) Data, smoothing, windows, averages, filters, digital filters, recursive filters, auto-correlation, cross-correlation.
(4) System estimation, spectral analysis, correlation and coherence, white noise methods.
(5) Digital processing review of DFT, FFT.
(6) Image processing: image acquisition, enhancement, restoration, reconstruction and segmentation.

**SP542 Optical Instrumentation**
12.5 credit points
No. of hours per week: four hours
Assessment: assignments and examination

An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.

**Subject description**
Incoherent and coherent light sources, types of lasers and their applications. Detectors of optical radiation, modulation of light, interferometry, lens design, fibre optics, Fourier transforms and imagery.

**SP544 Nuclear Instrumentation**
12.5 credit points
No. of hours per week: four hours
Assessment: practical work, reports, assignments, examination

A subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and of the Masters course in Biomedical Instrumentation.

**Subject description**

**SP545 Instrument Programming and Interfacing**
12.5 credit points
No. of hours per week: four hours
Assessment: practical work, reports, assignments, examination

A subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science.

**Subject description**
Interfacing peripheral devices
Interfacing techniques between computers and instruments. The Forth programming language. Handshaking multitasking, interrupts. Real time data handling.

General purpose instrumentation bus (IEEE 488), the I2C bus.

**SP547 Instrument Electronics**
12.5 credit points
No. of hours per week: four hours
Assessment: examination and laboratory reports

A subject in the Masters course in Biomedical Instrumentation.

**Subject description**
Electronics for biomedical instrumentation, including instrumentation amplifiers, isolation, noise suppression, microprocessors, etc. Use of a computer-based circuit design and simulation techniques.

**SP553 Introduction to Instrumentation Electronics**
12.5 credit points
No. of hours per week: four hours
Assessment: practical work, reports and examination

An introductory subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science for students with an inadequate background in electronics.

**Subject description**
DC circuits, Ohm's law, power dissipation, Kirchoff's laws, Thévenin's theorem, Norton's theorem; AC circuits, sine waves, amplitude, phase, phasor representation, complex number representation, capacitance, capacitive reactance, inductance, inductive reactance, impedance calculations for simple RLC circuits.

Amplifiers, input impedance, output impedance, loads, operational amplifiers, the ideal operational amplifier, the inverting configuration, the non inverting amplifier, the differential amplifier.

Semiconductor devices and circuits, P and N type semiconductor, the PN junction, the NPN transistor, the JFET.

Binary numbers decimal binary conversion, binary addition, binary multiplication, hexadecimal numbers, 8421 BCD, alphanumeric codes, error detection. Logic gates, Boolean algebra, Karnaugh maps, the RS flip-flop, monostable and astable devices, RS and D flip-flops, edge-triggering and master-slave flip-flops.

**SP555 Introduction to Biophysical Systems**
12.5 credit points
No. of hours per week: four hours
Assessment: assignments, practical work and examination

An introductory subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science and the Masters course in Biomedical Instrumentation for students with an inadequate background in the biological aspects of biophysics.

**Subject description**
Cell physiology, membranes and excitability, nerves and muscles. Bioenergetics. Flow and pressure. Biological control systems.

**SP563 Biophysics of Exercise**
12.5 credit points
No. of hours per week: four hours
Assessment: assignment and tests

An advanced subject of the biomedical instrumentation option of the Graduate Diploma of Applied Science.

**Subject description**

**SP601 Stand Alone Instrumentation**
4.0 credit points
No. of hours per week: two hours
Assessment: reports

A final semester subject for students majoring in computing and instrumentation.
subject description
The Forth language and the design of time critical turn key instrument systems. Implementing a program in Forth: incremental compilation, stack maintenance, multiple vocabularies, interrupts, multi-tasking, special features of the language. Optimised target compilation.

SP623 Industry Based Learning
5.0 credit points
A six-month period of industry based learning occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computing and Instrumentation). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor. This program is normally taken end-on from SP623.

SP624 Biophysics (Neurosciences B)
8.0 credit points
No. of hours per week: four hours
Prerequisite: SP524
Instruction: lectures, tutorials and laboratory classes
Assessment: examination, assignments and laboratory reports
A fourth-year subject for students majoring in medical biophysics.

Subject aims
To provide knowledge of basic and advanced EEG recording techniques.
To provide knowledge of sensory physiology of the visual and auditory systems.

Subject description
The auditory system and the vestibular apparatus: acoustics of the outer ear, sound transmission within the ear, peripheral organisation of receptors and CNS pathways, peripheral mechanisms and neural organisation of vestibular mechanisms, pathophysiology of auditory vestibular function, auditory and vestibular testing techniques, evoked potentials, cortex, brain stem, ENG, auditory prostheses.

Vision: anatomy of the eye, optics of visual system, receptor function central pathways, central processing, electrical recording of ENG, EEG, visual evoked response, intraocular pressure, recording, examination, pathology, assessment, adaptation, acuity, perimetry, spatial frequency.

EEG origin, recording, interpretation, analysis. Neurophysiological signal processing: basic concepts and methodology.

Textbook

References


Other as advised by lecturers.

SP625 Applied Biophysics B
8.0 credit points
No. of hours per week: four hours
Prerequisite: SP501
Assessment: examination, assignment and laboratory reports
A fourth-year subject for students majoring in medical biophysics.

Subject description
Medical imaging: ultrasound, nuclear methods, X-ray, CT scan, NMR (MRI), PET. Biological effects of radiation. Physical principles, image reconstruction, image quality. Microwave imaging.
Physical therapy: TENS, ultrasound therapy, PEMFs, laser therapy, UV, IR, microwave therapies.
Biomaterials: biocompatibility, implants in orthopaedics and dentistry, limb prostheses, cell-substrate interactions.
Functional electrical stimulation.
Environmental biophysics: ergonomics, stress in the workplace, overuse injury, effects of noise, electromagnetic radiation, etc. Effects of heat and cold. Bioeffects of atmospheric pollutants.

SP626 Applied Neurosciences
5.0 credit points
No. of hours per week: two hours
Prerequisite: SP524
Instruction: lectures and tutorials
Assessment: assignments and examination
A fourth-year subject for students majoring in medical biophysics.

Subject aims
To provide an overview of higher cortical function with associated physiological and behavioural measures.

Subject description
Cognitive processes.
Behavioural aspects of sleep and consciousness. Affective status, emotion.
Disorders of higher cortical functions: depression, anxiety, schizophrenia.

Textbook

References
As advised by lecturers

SP630 Instrumentation Systems B
10.0 credit points
No. of hours per week: four hours
Prerequisite: SP530
Assessment: examination, assignments and laboratory reports
A fourth-year subject for students majoring in scientific instrumentation.

Subject description
Lectures in control theory and other elected subjects of importance to instrumentation.

SP631 Neurophysiology of Mental Disorders
12.5 credit points
No. of hours per week: five hours
Prerequisite: SP527
Assessment: examination and assignment
A third-year subject for students completing the psychophysiology major.

Subject description
Disorders of affect: theories of depression, monoamines and depression, mechanism of action of antidepressants, anxiety and benzodiazapine — GABA interactions.

SP632 Psychophysiology Project
12.5 credit points
No. of hours per week: five hours
Prerequisite: SP528
Assessment: report
A third-year subject for students completing the psychophysiology major.

Subject description
This subject gives students the opportunity to apply techniques and skills introduced in the psychophysiology and psychology courses in an investigation into a topic of particular interest. Students may select an appropriate topic of interest at an early stage of the third year of the course, which can be adequately supervised, investigated and reported on within the above time constraints. The selected project work may involve such activities as physiological and/or psychological data collection, literature research, etc. or a combination of these. Projects will usually be individual but may sometimes involve shared aspects. Students will be expected to make a short verbal presentation on their project topic and to submit a final written report.

SP731 Technology Transfer
12.5 credit points
No. of hours per week: four hours
Assessment: assignments
A subject in the Masters course in Biomedical Instrumentation.

Subject description
Aspects of developing innovative biomedical instrumentation systems from prototype to production: market analysis, financial sponsorship, case studies. In seminars, ideas for potential medical devices are discussed in relation to production details and marketing strategies. Students are required to produce a report of the feasibility of a particular device, with production costs and sales projections.

SP711 Biosensors and Membranes
6.0 credit points
No. of hours per week: two hours
Assessment: assignments
A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.

Subject description
Membrane biophysics: tracer dynamics, applications of irreversible thermodynamics, active and passive transport mechanisms, Biosensor applications.

SP712 Physics of Biomaterials
6.0 credit points
No. of hours per week: two hours
Prerequisite: SP711 Biosensors and Membranes
Assessment: assignments
A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.
Subject description
Biophysical techniques: electron microscopy, electron and proton microbeam analysis, diffraction studies of biological materials, optical methods.

Dielectric studies.
Overview of physical methods of analysis of biological tissue.

SP713 Neurophysiological Techniques A
6.0 credit points
No. of hours per week: two hours
Assessment: assignments

A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.

Subject description
Information processing within neural systems. Analysis of neural mass field potentials.
Clinical, cortical, subcortical, and EEG/scalp surface recording techniques.
Spontaneous activity analysis, neuropsychological correlates, evoked potentials, time and frequency domain analysis, stimulus classification.
Origin of neuroelectric and neuromagnetic fields.

SP714 Neurophysiological Techniques B
6.0 credit points
No. of hours per week: two hours
Prerequisite: SP713
Assessment: assignments

A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.

Subject description
Signal processing techniques for EEG analysis. Effects of CNS lesions on the EEG.
EEG and EP/ERP changes associated with neuropsychiatric disorders. Recordings from the peripheral nervous system recording electric and magnetic fields.

SP715 Metabolic Measurement
6.0 credit points
No. of hours per week: two hours
Assessment: assignments

A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.

Subject description
Theoretical basis of oxygen consumption measurement, cardiac output determination by rebreathing techniques, clinical exercise testing.

SP716 Exercise Biophysics
6.0 credit points
No. of hours per week: two hours
Prerequisite: SP715
Assessment: assignments

A subject of the medical biophysics option of the Bachelor of Applied Science (Honours) program.

Subject description
Gas analysers and sampling systems, flow and volume meters and timing devices, computer facilities, ergonomics, workpower assessment, clinical aspects.

SP722 Minor Project
14.0 credit points
No. of hours per week: four hours in first semester
Assessment: report

A subject of the medical biophysics and/or scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

Subject description
An individual research project. Projects require a literature survey. Results, conclusions and recommendations are presented in a written report, and a verbal report may also be required.

SP732 Research Project
25.0 credit points
No. of hours per week: four hours for three semesters
Assessment: dissertation

A subject in the Masters course in Biomedical Instrumentation.

This subject gives the student the opportunity to apply subject matter studies in other course subjects to instrumentation-related problems in a specific field of interest. Where possible the projects are industry-sponsored and have relevance to the student's area of employment.
Cooperation between professionals in industry and/or health care and supervising staff at Swinburne help develop the student's competence. Each project requires a literature survey and theoretical and/or experimental investigation. Results and conclusions presented in a written dissertation and verbal presentation.

SP733 Research Project
25.0 credit points
No. of hours per week: eight hours
Assessment: dissertation

A subject in the Masters course in Biomedical Instrumentation.

This subject gives the student the opportunity to apply subject matter studies in other course subjects to instrumentation-related problems in a specific field of interest. Where possible the projects are industry-sponsored and have relevance to the student's area of employment.
Co-operation between professionals in industry and/or health care and supervising staff at Swinburne help develop the student's competence. Each project requires a literature survey and theoretical and/or experimental investigation. Results and conclusions presented in a written dissertation and verbal presentation.

SP751 Neural Network Applications
6.0 credit points
No. of hours per week: two hours
Instruction: mixed lectures and laboratory work
Assessment: assignments

A subject of the scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

Subject description
Theoretical and practical experience of a range of network architectures: backpropagation, Boltzman, counterpropagation, Hamming, Hopfield, linear vector quantisation, probabilistic, neural networks, self organising maps.
Neural networks in instrumentation.
Continuously adaptive networks.
SP752 Advanced Instrument Electronics
6.0 credit points
No. of hours per week: two hours
Instruction: lectures
Assessment: assignments

A subject of the scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

**Subject description**
Amplifiers, active filter synthesis, circuit analysis and simulation techniques, precision measurements: noise, CMR, shielding, designing with discrete semiconductors, power supplies: linear and switched mode, custom and semicustom digital and analog integrated circuits.

SP753 Optical Instrumentation
6.0 credit points
No. of hours per week: two hours
Assessment: assignments

A subject of the scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

**Subject description**
Radiometry and photometry: measurement of radiant flux and luminous flux. Sensor technology.
Colourimetry: colour measurement, industrial applications and standards, colour vision.
Optical instrument design: optical materials and processes, ray tracing, aberrations, design applications.
Fibre optic techniques: fibre types, modes, resonators, losses and sensors.
Interferometry: coherence theory, interferometry designs and applications.
Fourier optics: image analysis and processing, modulation transfer function calculations.
Lasers: simulated emission, radiation theory, relaxation processes, optical resonators, gain and saturation effects.

SP754 Microcontroller Design Techniques
6.0 credit points
No. of hours per week: two hours
Instruction: mixed lecture and laboratory work
Assessment: assignments

A subject of the scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

**Subject description**

SP755 Nuclear Instrumentation
6.0 credit points
No. of hours per week: two hours
Instruction: mixed lectures and laboratory work
Assessment: assignments

A subject of the scientific instrumentation option of the Bachelor of Applied Science (Honours) program.

**Subject description**
Industrial, medical and scientific applications of nuclear radiation. Topics include: gamma ray spectroscopy, neutron activation analysis (NAA), prompt gamma neutron analysis (PGNA), neutron diffraction studies, neutron radiography, diagnostic and therapeutic applications of radioisotopes, and nuclear radiation detectors.
A first-year subject taken by students majoring in medical biophysics and instrumentation.

**Subject description**
Motion and forces: relativistic kinematics and dynamics, rotational kinematics and dynamics, gravitation.
Electricity and magnetism: electric fields, DC circuits, magnetic fields, electromagnetism, AC circuits.
Atomic physics: photoelectric effect, x-rays, Compton effect, photon-electron interactions, Bohr model, de Broglie matter waves.
Nuclear physics: binding energy, nuclear forces, radioactivity, alpha, beta, gamma decay, nuclear reactions, radiation detectors.
Vibrations, waves and sound.
Optics: optical instruments, interference and diffraction, polarization, optical communication.
Thermal physics: temperature and heat, gas laws and thermodynamics.

**SP1210 Introduction to Scientific Instrumentation**
10.0 credit points per semester
No. of hours per week: four hours
Instruction: lectures, laboratory work and tutorials
Assessment: examination, workshop reports and laboratory computer testing

A first-year subject for students majoring in instrumentation.

**Subject description**

**Textbooks**

**SP1224 Introductory Biophysics**
5.0 credit points per semester
No. of hours per week: two hours for two semesters
Assessment: examination, assignments and laboratory reports

A first-year subject for students majoring in medical biophysics and instrumentation.

**Subject description**
Application of physics to clinical problems. Biomechanics: anatomy of bones, joints, spinal cord, kinesiological measurement. Control systems: homeostasis, feedback in biological systems, specific application to the endocrine and reproductive systems. Bioenergetics: metabolic measurement, food and physical activity, gastro-intestinal function.

**SP3400 Physics 2**
10.0 credit points per semester
No. of hours per week: four hours for two semesters
Assessment: examination
A second-year subject for students majoring in computing and instrumentation.

**Subject description**
Structure and properties of matter.
Classical mechanics: Newton's Laws, the two body problem, orbital mechanics, vibrations, normal modes, resonance, rigid body dynamics, angular momentum, inertial tensor, Euler's equations, Lagrangian formulation of classical mechanics, introduction to statistical mechanics.

**SP3409 Physics 3-4**
10.0 credit points per semester
No. of hours per week: four hours for two semesters
Assessment: examination
A second-year subject for students majoring in medical biophysics and instrumentation.

**Subject description**
Structure and properties of matter.
Classical mechanics: Newton's Laws, the two body problem, orbital mechanics, vibrations, normal modes, resonance, rigid body dynamics, angular momentum, inertial tensor, Euler's equations, Lagrangian formulation of classical mechanics, introduction to statistical mechanics.
conditions, electromagnetic waves in conducting and non-conducting media, reflection and transmission, cavities and waveguides, sources of radiation.


**SP3410 Analogue and Optical Techniques**

6.0 credit points per semester

No. of hours per week: three hours for two semesters

Prerequisite: SP1210

Assessment: examination, laboratory reports and laboratory reports

A second-year subject for students majoring in instrumentation.

**Subject description**

An introduction to the bipolar junction transistor, the common emitter and differential amplifiers. Transistors as switches. Regulators. Non-linear feedback elements.


The operational amplifier and circuits based on it.

Properties and applications of lasers: sources and detection of optical radiation; electro, magneto and acoustic optical effects and their applications; fibre optic sensors, types and properties of optical fibres, intensity, phase and frequency modulation in optical fibre sensors.

**SP3430 Interfacing and Nuclear Techniques**

6.0 credit points per semester

No. of hours per week: three hours for two semesters

Prerequisite: SP1210

Assessment: examinations, laboratory reports and laboratory tests

A second-year subject for students majoring in scientific instrumentation.

**Subject description**

An introduction to the hardware elements used in a typical microprocessor system, including registers, adders, multipliers, multiplexers, decoders, memory, input/output and peripheral devices.

An introduction to the use of a computer language for interfacing program design, timing, interrupts.

Analogue to digital and digital to analogue conversion. Sample and hold. Serial communications, Interrupts. Direct memory access.

Nuclear transducers: radiation safety, radiation detectors, pulse height analysis, spectrometry.

**SP4190 Occupational Hygiene and Safety**

9.0 credit points

No. of hours per week: four hours

Assessment: examination and assignments

A final-year subject of the degree course in environmental health.

**Subject description**

Environmental hazards: accident prevention. Work-related injuries including tenosynovitis, back and muscle injuries, Relationship of physical defects to employee safety. Stress in the workplace, measurement and alleviation. Passive smoking.


Health issues associated with transmission and distribution of electrical power and electrical appliances.

Toxicology

Toxic substances: mechanisms of action and pathogenic effects (carcinogenesis, mutagenesis, teratogenesis). Use of mammals and sub mammalian systems in predicting and assessing toxic effects in man.

Routes of ingestion of toxic substances including heavy metals, benzene, PCBs, solvents, organic chemicals, silica, asbestos, allergens and pesticides.

Evaluation and control measures.

Safety technology.


Chemical safety. Handling, chemical safety, hazard identification, storage and transport of dangerous and toxic chemicals. Inspection of ventilation ducts for micro-organisms.

**SP5609 Physics 5-6**

6.0 credit points in semester one and 7.0 credit points in semester two

No. of hours per week: two hours for two semesters

Assessment: practical work and examination

A fourth-year subject for students majoring in medical biophysics.

**Subject description**

Solid state physics: tunnel diodes, RN and PIN photodiodes, RN detectors for protons, for alpha particles and for gamma rays.


Nuclear magnetic resonance: basic theory of NMR, CW and pulsed NMR experiments, NMR spectroscopy and magnetic resonance imaging.

SQ100  Programming in Ada
12.5 credit points in semester one and 10.0 credit points in semester two
No. of hours per week: six hours for two semesters
Instruction: a combination of lectures, tutorials and laboratory sessions, assignments and examinations

A first-year subject of the degree course in computer science.

Subject description
Programming methodology and ADA; specifications; problem solving; top-down and bottom-up methods; sequence selection and iteration; data types; procedural abstraction; searching and sorting algorithms.
Advanced programming; dynamic data structures; packages; abstract; data types; I/O models; exception handling.

Textbooks
To be advised

SQ103  Software Practice 1
7.5 credit points in semester one and 12.5 credit points in semester two
No. of hours per week: four hours in semester one, followed by four hours in semester two
Instruction: lecture, workshop and laboratory sessions
Assessment: weekly team exercises, six assignments and two tests

A first-year subject of the degree course in computer science and software engineering.

Subject aims
The aim is to provide a broad introduction to the theory and practice of software engineering, with an emphasis on software process models, lifecycle activities and the pragmatics of teamwork. Particular emphasis is placed on an object-oriented approach to systems analysis and design.

Subject description
Fundamentals of software engineering; the sense of teamwork; the use of end-user software to support organisational activities; systems analysis and design; object modelling technique; documentation standards; programming practice; software testing; project costing; project planning; further analysis and design; object-orientation and Ada; software maintenance.

Textbooks
To be advised

SQ116  Communication Skills
7.5 credit points
No. of hours per week: four hours
Prerequisites: nil
Assessment: assignments and examination

Effective communication is essential for students to function efficiently in the university and later in their chosen career.

Subject aims and description
This course aims to:
- develop communicative competence through theory and workshop activities;
- enhance awareness of the necessity for clear and coherent communication;
- recognise and minimise communication barriers;
- further understanding of group dynamics and responsibilities of participation;
- identify and meet immediate communication requirements;
- provide portability skills for the work environment;
- demonstrate that audience need is paramount in written, verbal and non-verbal communication;
- provide techniques, strategies, checklists and practical skills for a variety of purposes and audiences;
- improve analytical skills and self correction techniques;
- implement logical and cohesive practices.

References

SQ117  Introduction to Computer Systems
10.0 credit points
No. of hours per week: three hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: assignments and a final examination

A first-year subject of the degree courses in computer science, mathematics and computer science and computing and instrumentation.

Subject description

SQ207  Computer Organisation
10.0 credit points
No. of hours per week: three hours
Instruction: lecture and laboratory sessions
Assessment: assignment and examination
Subject aims
To introduce the main principles of computer architecture, computer organisation and assembly language programming.

Subject description
Introduction to combinatorial and sequential circuit design; basic architecture of a computer; CPU organisation; execution of machine instructions; how programs interact with the computer hardware; introduction to assembly language programming.

Textbooks
To be advised

**SQ210 Programming in C**
- 10.0 credit points
- No. of hours per week: four hours
- Instruction: a combination of lectures and laboratory exercises
- Assessment: programming assignments and a final examination

A first-year subject of the degree course in mathematics and computer science and computing and instrumentation.

Subject aims
To study the programming language C and the related software engineering practice through consideration of the specification, design and implementation of algorithms in C. This will involve an examination of C data types and structures, control statements, functions and formatted I/O.

Textbooks
To be advised

**SQ214 Formal Methods**
- 10.0 credit points
- No. of hours per week: three hours
- Instruction: lectures and tutorials
- Assessment: mid-semester test, assignment and final examination

A first-year subject of the degree courses in Mathematics and Computer Science.

Subject aims
Formal Methods examines the scope, role and application of mathematics in contemporary software development. Particular emphasis is placed on the use of discrete mathematics for formal specification.

After completing SQ214, a student will be able to: apply the discrete mathematics taught in the course to system modelling; interpret and construct formal specifications using the specification language defined in the lectures and recommended readings (Z or VDM-SL).

Subject description
Introduction to formal methods; propositional calculus; proof and argument; set theory; predicate calculus; relations; functions; sequence; bags; formal specification languages — Z or VDM-SL; graphs; formal languages; finite state machines.

Textbooks
To be advised

**SQ300 Data Structures and Algorithms**
- 10.0 credit points
- No. of hours per week: three hours
- Prerequisites: SQ100 Programming in Ada
- Instruction: lecture and tutorials
- Assessment: assignments and examination

A second-year subject of the degree course in computer science and software engineering.

Subject description
Data Structures and Algorithms: this unit pursues the goal of good programming (correctness, flexibility, adaptability, portability, utility and clarity) through the concepts of modularity and abstract data types.

Syllabus: common data structures, associated algorithms and applications; stacks, queues, trees, binary search trees, balancing; heaps, sets; graphs; hash tables; Ada generics.

Textbooks
To be advised

**SQ303 Software Practice 2**
- 10.0 credit points
- No. of hours per week: three hours in semester three, followed by seven hours in semester four
- Instruction: combination of lectures, CASE (Computer-Aided Software Engineering) laboratory sessions and a software development project
- Assessment: assignments, an examination at the end of third semester, and project deliverables

A second-year subject of the degree course in computer science.

Subject aims
To study techniques and strategies for the management of medium to large scale software development projects. Students will exercise these skills by working on several medium scale group projects.

Subject description
Current topics include project planning and estimation; software documentation standards; failure of conventional projects; improved productivity techniques; structured project life cycle; project feasibility study; software requirement specification; software design specification; software implementation; software acceptance test generation; quality control; project risk management; project monitoring and control; project politics; software development environment and CASE; software maintenance; safety critical systems.

Textbooks
To be advised

**SQ305 Database**
- 10.0 credit points
- No. of hours per week: three hours
- Instruction: lectures and laboratory sessions
- Assessment: assignments and final examination

A core subject for all undergraduate computing courses.

Subject aims
To supply the practical skills and knowledge to design most databases used in industry; to provide the foundation to evaluate existing database management systems; to teach proficiency in SQL.

Subject description
The theory and process of database design, including database architecture; database architecture; data modelling; relational theory; logical and physical design; relational, network, hierarchical and object oriented databases; SQL.

Textbooks
To be advised
Human-Computer Interaction

10.0 credit points
No. of hours per week: three hours
Instruction: lectures and seminars
Assessment: two assignments and one exam

A second-year subject of the degree course in computer science, a third-year elective of the degree course of mathematics and computer science, a fourth-year elective of the degree course in computing and instrumentation.

Subject aims
The aim is to introduce students to the process of user interface design.

Subject description
Technology: usability of input/output devices and interaction styles.
Methodologies: Formal, cognitive and usability approaches to developing appropriate human-computer interaction.
Theories: theoretical foundations of HCI.

Advanced C

10.0 credit points
No. of hours per week: three hours
Instruction: a combination of lectures and laboratory sessions
Assessment: one assignment and a final examination

Subject aims
To introduce common data structures and algorithms in C; to extend the skill of programming in C.

Subject description
Abstract data types; recursion; dynamic memory allocation; standard abstract data types (stacks, queue, tables, linked lists, trees etc.); searching and sorting; algorithm efficiency. An introduction to C++ may be included.

Software Engineering — Systems Analysis

10.0 credit points
No. of hours per week: three hours
Instruction: a combination of lectures and tutorial sessions
Assessment: assignment and/or projects and a final examination

This is a second-year subject for the degree of mathematics and computer science.

Subject aims
Software engineering is the study of organisational and technical issues associated with the development of large-scale software systems. This subject surveys a variety of process models, management and development methods and techniques common to software engineering.

Data Communications

10.0 credit points
No. of hours per week: three hours
Instruction: a combination of lectures and practical sessions
Assessment: assignments and a final examination

A second-year subject of the degree courses in computer science and mathematics and computer science, a final year elective of the degree course in computing and instrumentation.

Subject description
An introduction to the fundamental concepts in modern computer-to-computer communications. Topics covered include physical aspects of data communications, data link control, terminal base networks, communication protocols, distributed computer systems, local area networks, public data networks, Telecom Australia data communication services, OSI — Open Systems Interconnection.

COBOL Programming

10.0 credit points
No. of hours per week: three hours
Instruction: lecture and practical classes
Assessment: assignments and exam

A final-year elective of the degree courses in computer science, mathematics and computer science and computing and instrumentation.

Subject aims
The aim is to introduce the COBOL language and its problem solution domain.

Subject description
Introduction to structured programming: COBOL overview; file, record and data definition; file processing; modularity — perform; arithmetic; move, editing, if; validation, testing, debugging; control groups; tables; strings; subprograms; sort.
Textbook

SQ412 Systems Programming
10.0 credit points
No. of hours per week: three hours
Prerequisites: approved competence in C programming
Instruction: lectures and laboratory sessions
Assessment: assignment and exam
Subject aims
By the end of the unit, students should understand the following: low level I/O; file system access and manipulation; time under UNIX; process control; accessing user information under UNIX; signals and interrupts; interprocess communication and networking; I/O to terminals and device control.
Subject description
Low level I/O will cover file descriptor, open(), close(), read(), write(), and system calls. It will also cover error conditions and how they are handled under systems programming. File system access and manipulation will examine the UNIX file system, reading directories, finding out information about files from inodes, creating, changing and removing directories etc. Time under UNIX will look at a number of aspects of time under the UNIX operating system. Process control will examine creation of processes under UNIX, the overlaying of processes with programs and the synchronisation of processes. Accessing user information will examine the general area of asynchronous events under UNIX. Interprocess communication and networking will look at the facilities system V UNIX offers for interprocess communication, including pipes and peer to peer communications using the socket mechanism. This is extended to cater for communication between different computers. I/O to terminals and device control examines the general area of controlling devices under UNIX with particular reference to terminal control.
Textbooks
To be advised

SQ419 Artificial Intelligence
10.0 credit points
No. of hours per week: three hours
Prerequisite: nil
Instruction: a combination of lectures, laboratories and tutorials
Assessment: a combination of assignments and examination
Subject aims
- To give students an introduction to some of the basic concepts and tools of symbol-based artificial intelligence research and their application in expert systems.
- To contrast the more recently emergent non-symbolic artificial neural network research and applications.
- Upon completion of the course the students should have gained an appreciation of the difficulties involved in encoding knowledge, even in restricted domains, in such a fashion that 'intelligent behaviour' can be elicited.
Subject description
- Problem solving and search: depth first, breadth first, beam searching, hill climbing, A*, minimax.
- Knowledge representation: production systems, logic systems, inheritance networks, structured objects/frames.
- Expert systems as applied AI: inference and uncertainty, knowledge acquisition.
- Artificial neural networks: backprop, other architectures, applications.
- Genetic algorithms: search, optimisation, classifier systems.
- Natural language processing.
- Machine vision.
Textbooks
To be advised

SQ500 Concurrent Programming
10.0 credit points
No. of hours per week: three hours
Prerequisite: SQ300 Data Structures and Algorithms
Instruction: lectures and laboratory sessions
Assessment: assignment and examination
A final-year subject of the degree course in computer science and computing and instrumentation, a third-year elective of the degree course of mathematics and computer science.
Subject description
A study of the logical problems of concurrency: mutual exclusion; safety and liveness; mechanisms to control concurrency; semaphores; monitors; shared memory and message passing; the CSP model; concurrent programming in Ada; concurrency in real-time and distributed systems.

SQ502 Unix Systems Programming
10.0 credit points
No. of hours per week: three hours
Prerequisite: SQ402
Instruction: a combination of lectures and laboratory work
Assessment: examination (70%) and assignment (30%)
A final-year elective of the degree courses in computer science and computing and instrumentation, a third year elective of the degree course of mathematics and computer science.
Subject description
The subject examines the UNIX operating system by consideration of the use of some of the more common system calls. It deals with the area of low level I/O, the file system, process creation and control, signals, communications and device control. The subject has an applications focus: stressing the use of the operating system to accomplish application objectives.
Textbooks
To be advised

SQ503 Software Practice 3
10.0 credit points per semester
No. of hours per week: three hours in semester seven, followed by six hours in semester eight
Instruction: lectures and practical work
Assessment: assignments
A final-year subject of the degree course in computer science.
Subject description
This subject requires that students, working in large teams, undertake a large scale software development project, preferably industrially based. Software development,
documentation and system evaluation must be completed. The project will require students to exercise advanced management and technical development skills.

**SQ511 Declarative Programming**
10.0 credit points
No. of hours per week: three hours
Prerequisites: SQ310 or SQ300
Instruction: lectures, tutorials and laboratory sessions
Assessment: programming assignments and examination

**Subject aims**
By the end of the unit, students should understand the salient features of functional and/or logic programming. (The balance between the two may vary from year to year). They should be able to develop programs from specifications and appreciate the mathematical properties of such programs.

**Subject description**
A selection from: functional programming in a modern functional language (Haskell, Miranda).
- derivation of functional programs
- logic programming foundations
- programming in Prolog
- applications of logic programming

**Textbooks**
To be advised

**SQ523 Industry based Learning**
50.0 credit points
A six-month period of industry based learning occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computer Science and Software Engineering). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

**SQ527 Computer Architecture**
10.0 credit points
No. of hours per week: three hours
Prerequisite: SQ207
Instruction: lectures and tutorials
Assessment: assignment and final exam

**Subject aims**
To introduce computer architecture principles.

**Subject description**
Concept of multi-level machines; computer structure; CPU organisation; microprogrammed CPU’s; microprocessors; memory devices; input/output devices; bus structures.

**Textbooks**
To be advised

**SQ604 Object Oriented Programming**
10.0 credit points
No. of hours per week: three hours
Prerequisite: SQ310 or SQ300
Instruction: lectures, tutorials and laboratory sessions, studying software engineering principles and goals using object oriented techniques
Assessment: assignments and examination

A final-year subject of the degree course in computer science, a final-year elective of the degree courses in mathematics and computer science and computing and instrumentation.

**Subject description**
Object-oriented software construction: object-oriented methodologies for programming, systems analysis and systems design are investigated. In-depth examination is made to illustrate the benefits of object oriented methods as applied to modern complex software engineering tasks.

**Textbooks**
To be advised

**SQ606 Computing in the Human Context**
10.0 credit points
No. of hours per week: three hours
Instruction: a combination of lecture and tutorial sessions
Assessment: essay and examination

A final-year subject of the degree courses in computer science and software engineering, and an elective subject of the degree courses in mathematics and computer science and computing and instrumentation.

**Subject aims**
The aim is to provide students with a framework for the development of personal and corporate ethics appropriate for the information technology professional, and to allow students to explore the uses in and implications for society of contemporary developments in computing.

**Subject description**
Ethical and legal issues in computing, and their relationship to the computing profession; a selection of other topics, exemplified by: philosophy and artificial intelligence; computers and the arts; futures.

**Textbooks**
To be advised

**SQ613 Computer Science Team Project**
10.0 credit points
No. of hours per week: three hours
Instruction: lectures and practical work
Assessment: assignments

A final-year subject of the degree courses in mathematics and computer science and computing and instrumentation.

**Subject description**
In this subject, students will apply the software engineering skills acquired throughout the degree, to a substantial group software development project. Student groups will choose from a range of projects and they will then have to analyse the project’s requirements, design and then develop the system to the best of their ability in the time available. Subject to the approval of the lecturer, students may generate their own project.
SQ618  **Computer Graphics**  
10.0 credit points  
No. of hours per week: three hours  
Prerequisite: SQ310 or 54300  
Instruction: a combination of lectures and tutorial sessions  
Assessment: assignment and examination  
A final-year subject of the degree courses in computer science and computing and instrumentation, a third-year elective of the degree course in mathematics and computer science.  
**Subject description**  
Computer graphics: hardware for computer graphics; basic 2-D and 3-D graphics drawing; transformations; data structures for graphics; windowing and clipping.  
**Textbooks**  
To be advised

SQ619  **Expert Systems**  
10.0 credit points  
No. of hours per week: three hours  
Prerequisite: SQ419 Artificial Intelligence A  
Instruction: a combination of lecture and tutorial sessions  
Assessment: project and examination  
A final-year elective of the degree courses in computer science, mathematics and computer science and computing and instrumentation.  
**Subject description**  
The unit covers the techniques and issues of knowledge, acquisition and building expert systems.  
**Textbooks**  
To be advised

SQ623  **Industry Based Learning**  
50.0 credit points  
A six-month period of industry based learning occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science (Computer Science and Software Engineering). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor. This program is normally taken at the end of SQ523.

SQ700  **Programming in C**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: a combination of lectures and laboratory sessions  
Assessment: two assignments and a final examination  
A subject of the Graduate Diploma of Applied Science (Computer Science).  
**Subject aims**  
To formulate and design algorithmic solutions to a range of simple problems, including those with a commercial orientation; to edit, compile, debug, test and run C language programs; to design a program, using a top down methodology, given a functional specification; to implement the design as a well-structured program, using the major control structures and functions (with parameter passing) provided by the C language; to be able to implement data structures and data types in C as a method of type abstraction; to write code that is well commented and to understand the importance of such documentation; to obtain input from both keyboard and file, and be able to send output to both file and screen.  
**Subject description**  
A study of the programming language C and the related software engineering practice — topics include: program specification; algorithmic approach to problem solving; program design methodology; C basis; simple data types (int, float, etc.); control of flow; functions; arrays; string handling with standard libraries; structures; data structures and user-defined data types; file I/O with the standard libraries; common algorithms — sorting, searching, file processing.  
**Textbooks**  
To be advised

54702  **Systems Programming**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: a combination of lectures and laboratory sessions  
Assessment: two assignments and a final examination  
A subject of the Graduate Diploma of Applied Science (Computer Science).  
**Subject aims**  
To introduce students to the UNIX operating system; to teach the use of shell scripts as a method of prototyping system software; to examine systems programming in a UNIX environment via consideration of various system calls.  
**Subject description**  
Introduction to UNIX operating systems; UNIX file management; commands and filters; electronic mail; structure of the operating system; tools — make, SCCS, lint and sdb; shell programming (differences between Bourne and C shell); systems programming (low level I/O, accessing the file system, creating and controlling processes, communication between processes, device control networks); system administration.

SQ703  **Software Development Project**  
12.5 credit points per semester (25 credit points in total)  
No. of hours per week: two hours (lectures) in semester one, two hours (project supervision) for two semesters  
Instruction: a combination of lectures, project supervision and software project development practice  
Assessment: by deliverables, e.g., project plan, requirements definition and design document, as well as the actual software. An individual assignment may also be required  
A subject of the Graduate Diploma of Applied Science (Computer Science).  
**Subject aims**  
By the end of the unit, the student should have detailed knowledge of project management theory, and be able to apply that theory to the management of software development projects; have knowledge and experience in three to five person group projects, which, although technically of only moderate complexity, requires students to exercise significant project management skills.  
**Subject description**  
Software development life cycle: project planning, estimation and control; project communication; project progress measurement and evaluation; politics of projects; project and
product risk analysis; cost/benefit analysis; development of system test plans and implementation plans; software quality assurance; software standards; project team practice — requiring analysis, design and implementation with full documentation, of a software product.

**Textbooks**
To be advised

**SQ705 Database**
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures, tutorials, and laboratory sessions
Assessment: one assignment, tutorial and laboratory exercises, and a final examination

A subject of the graduate diploma of applied science (computer science).

**Subject aims**
To supply the practical skills and knowledge to design most databases used in industry; to provide the foundation to evaluate existing database management systems; to teach proficiency in SQL.

**Subject description**
The theory and process of database design, including — database architecture; data modelling; relational theory; logical and physical design; relational, network, hierarchical and object-oriented databases; SQL.

**Textbooks**
To be advised

**SQ710 Advanced C Programming**
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures and laboratory sessions
Assessment: two assignments and a final examination

**Subject aims and description**
To introduce dynamic memory allocation in C; to introduce Abstract Data Types and to examine some of the common ADTs, eg. lists, stacks, queues and binary trees; to introduce critical examination of algorithm efficiency and examine some common searching and sorting algorithms; to introduce the C + + language and the ideas of object-oriented software design.

Dynamic memory allocation in C; recursion; searching and sorting; introduction to ADTs; standard ADTs (list stack, queue, table, tree); the C + + language; object-oriented software design.

**Textbooks**
To be advised

**SQ714 Systems Analysis and Software Engineering**
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures and tutorials
Assessment: two assignments and a final examination

A subject of the graduate diploma of applied science (computer science).

**Subject aims**
To study the problems confronting the software engineer in the development of modern computer software.

**Subject description**
Software development lifecycles; requirement analysis; software design; implementation and installation; quality assurance; documentation.

**Textbooks**
To be advised

**SQ727 Communications**
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: assignments and a final examination

A subject of the graduate diploma of applied science (computer science).

**Subject aims**
To introduce the fundamental concepts and components involved in data communications; to develop an understanding of communication protocols and computer networks.

**Subject description**
Historical evolution of computer communications and standards organisations; basic communications theories and terminologies; the physical layer — transmission media, signal types, interface standards; the link layer — error control, flow control, link management; terminal based networks — statistical multiplexes, concentrators, front-end processors, terminal network protocols (Bisynch and HDLC); introduction to the ISO Basic Reference Model to the ISO — the Seven Layer Model, comparison of proprietary network architectures; public data networks — characteristics, packet-switched data networks, circuit-switched data networks, ISDN, standards, overview of Telecom Australia services (Austpac, Datel, DDS, Megalink Services); local area networks — characteristics, topology and access method, the CSMA/CD and Token passing ring protocols, LAN management, network planning management — internetworking, performance evaluation, management and security issues; electronic mail and EDI systems.

**Textbooks**
To be advised

**SQ903 Honours Reading Unit**
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures, seminars and individual consultation
Assessment: seminar and essays

A unit in the Bachelor of Applied Science (Honours in Computer Science).

**Subject aims**
To introduce the student to methods of research and communication of the results of research.

**Subject description**
Covers literature reviews, writing papers, reports, thesis, etc.
SQ908  Honours Computer Graphics  
12.5 credit points  
No. of hours per week: three hours  
Instruction: a combination of lectures and tutorial sessions  
Assessment: assignments and examination  

A unit in the Bachelor of Applied Science (Honours in Computer Science).  

Subject aims  
To familiarise the student with advanced computer graphics principles.  

Subject description  
Basic 3-D graphics rendering; projections; colour; theory; lighting models; ray-tracing; radiosity; data representation; animation.  

Textbooks  
To be advised

SQ913  Honours Research Project  
50.0 credit points  
No. of hours per week: eight hours for two semesters  
Instruction: individual consultation with a supervisor, as required  
Assessment: by deliverables (predominantly a thesis)  

A unit in the Bachelor of Applied Science (Honours in Computer Science).  

Subject aims  
To introduce the student to academic research.  

Subject description  
An individual research project is found for each student. This project should balance the need to research previous work in the field with some level of practical work.
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* No entry exists in this Handbook — please contact the Faculty Office for further details.

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Staff — Faculty of Arts

Dean
Professor L.A. Kilbride, BA(Q'ld), MA(ANU), PhD(LeT)
Associate Dean
FX. Walsh, BA(Melb), BEd(Mon)
Sub-Dean
Research: Associate Professor J.A. Castleman, BA(Hons)(Ind), PhD(Mon)
Associate Degree Pilot Project Coordinator
M. Elliott, BA(Melb), MEd(Melb), PhD(Stanford)
Assistant Registrar (Arts)
T. Kezby, BA(Melb)
Administrative Officer
G. Quirk
Laboratory Manager
A. Rice

Academic staff

Asian Languages and Cultures

Chair
A. Skoutarides, BA(Hons), PhD(Mon)
Senior Lecturers
N. Fukushima, MA(Melb), DipEd(Tokyo)
M. Elliott, BA(Melb), MEd(Melb), PhD(Stanford)
Associate Degree Pilot Project Coordinator
T. Kezby, BA(Melb), MEd(Melb), PhD(Stanford)

Italian Language and Culture

Chair
D. Fairservice, MA(WA), PhD(Edin), DipEd(MCAE)
Senior Lecturers
L.A. Hougaz, MA(Melb), DipEd(Melb)
M.M. Masini, BA(Hons)(Melb), DipEd(LeT)
Lecturer
J. M. Masini, BA(Hons)(Melb), DipEd(LeT)

Media, Literature and Film

Chair
A. Skoutarides, BA(Hons), PhD(Mon)
Senior Lecturers
H. Molnar, DipBusStuds, BA(Media)(RMIT), MA(UW-Madison)
T.P. Ryan, BA(Melb), BEd(LeT)
D. Tolls, BA(Hons)(LeT), PhD(Melb)

German

Chair
J. Arnold, BA(Melb), DipEd(Melb), MACS
Senior Lecturers
J. Barbour, BEng
J. Goodall, BA, DipEd(Qld), GradDipArt(AppF&T)(StT)
A. Hakeem, MA(Dacca and Cantab)
J. Schwartz, BEd(Mon), MEd(LeT)
K. Vigo, BA(Melb)

Philosophy and Cultural Inquiry

Chair
M. Hamey, MA, DipEd(Melb), PhD(ANU), GradDipArt(AppF&T)(StT)

Senior Lecturers
H. Kannegiesser, BA(Melb), MEd(Mon)
R. Love, BSc(Qld), CHPS(Cantab), MA, PhD(Melb)

Lecturers
A.E. Gare, BA(Hons)(WA), PhD(Murdo)
P.J. Healy, MA, MS, PhD(PennState)

Political Studies

Chair
D.Y. Mayer, BA, LL.B(Melb), MA(Mon), GradDipEd(Haw)
Senior Lecturers
S. Lakhwa, BSc(Hons)(Hull), GradDipUrbStudies(London), PhD(Mon)
P.J. Love, MA(Melb), PhD(ANU)
K.J. Rowley, BA(Hons)(Melb)
FX. Walsh, BA(Melb), BEd(Mon)

Lecturers
G.C.J. Morison, BA(Melb), DipSocStud(Melb), GradDipEd(Haw)
M. Ross, BA(Hons)(Melb)
J. Schmid, MA(Melb)

Psychology

Head
Associate Professor K.J. Heskin, BA(Hons)(Queens), MA(Dub), PhD(Dunelm), C Psychol, AFBS, MARS
Principal Lecturers
J.P. McLennan, MA(ANU), PhD(Mon), GradDipEd(Haw), MARS
Senior Lecturers
G.W. Bates, BCom, BA(Hons), MA(ClinPsy), PhD(Melb), MARS, MABMA
R.H. Cook, BSc(Hons)(Melb), MEd(Mon), MARS
J.F. Wangeman, MA, BCom, BEd(Melb), MARS

Lecturers
P. Caputi, BA(Hons), GradDipMaths(W'gong)
B.M. Findlay, BA, BSc(Hons), MSc(Melb), MAPsS
V. Power, BA, GradDipAppPsych(StT), MARS
P. Reddy, MA(Melb), MAPsS
M.G. van Geloven, Drs(Univ. of Adam)

Sociology

Chair
J. Mulvany, BA(Hons), DipEd, PhD(Mon)
Associate Professors
T.W. Burke, BEd(Hons)(Mon), MScSocSc(Birm), MEd(Mon)
T.G. Castleman, BA(Hons)(Ind), PhD(Mon)

Senior Lecturers
K. Betts, BA(Hons), PhD(Mon)
M. Gilding, BA(Hons)(ANU), PhD(Macquarie)
D. Hayward, BA, GradDipUrbSoc(StT), PhD(Mon)
J. Mulvany, BA(Hons), DipEd, PhD(Mon)
A. Seitz, DipRetailBusAdmin(Munich), BA(Hons)(Mon)

Centres

Faculty of Arts academic staff are associated with the following:
Centre for Industrial Democracy
Centre for Media and Telecommunications Centre
Centre for Psychological Services
Centre for Urban and social Research
Centre for Housing and Planning
Centre for Women's Studies
(See pages 37, 38 and 39 for details.)
Courses offered

Undergraduate

NO60  Associate Degree in Social Science
NO50  Bachelor of Arts
NO51  Bachelor of Arts (Psychology and Psychophysiology)
NO58  Bachelor of Arts/Bachelor of Business (Italian)
NO57  Bachelor of Arts/Bachelor of Business (Japanese)
NO59  Bachelor of Arts/Bachelor of Business (Korean)
NO  Bachelor of Arts/Bachelor of Business (Vietnamese)
NO52  Bachelor of Arts (Honours)

Postgraduate

NO802*  Graduate Diploma in Asian Studies
NO80*   Graduate Diploma in Applied Philosophy
NO84    Graduate Diploma in Applied Psychology
NO86    Graduate Diploma in Equal Opportunity Administration
NO83    Graduate Diploma in Japanese
NO87    Graduate Diploma in Japanese for Professionals
NO88    Graduate Diploma in Korean
NO801   Graduate Diploma in Korean for Professionals
NO803*  Graduate Diploma in Philosophy and Cultural Inquiry
NO85    Graduate Diploma in Urban Research and Policy
NO89    Graduate Diploma in Writing
NO97*   Master of Applied Philosophy
NO90    Master of Arts (by research)
NO91    Master of Arts in Counselling Psychology
NO92    Master of Arts in Japanese
NO94    Master of Arts in Korean
NO96*   Master of Arts in Philosophy and Cultural Inquiry
NO93    Master of Arts in Urban Research and Policy
NO95*   Master of Communications
NO01    Doctor of Philosophy
NO02    Professional Doctorate in Psychology

* Subject to accreditation. No entry exists in this Handbook — please contact the Faculty Office for further details.

Faculty of Arts — Disciplines

Within the Faculty of Arts there are six disciplines, and the Department of Psychology, each responsible for different course studies in specific subject areas. They are:

Asian Languages and Cultures
  Japanese
  Korean
  Vietnamese

Italian Language and Culture

Media, Literature and Film
  Literature
  Media Studies

Philosophy and Cultural Inquiry

Political Studies

Psychology
  Psychology/Psychophysiology

Sociology

Interdisciplinary Studies
  Asian Studies
  Australian Studies
  Cultural Studies

General Faculty Information

Scholarships and Prizes

Study in Japan Scholarship
Awarded to assist students who are either postgraduate or third stage level, to study in Japan. Applications close in June. Value: may include return air fare to Japan and tuition fees.

APS Prize in Psychology
Awarded by the Australian Psychological Society to the student who has completed with overall distinction a fourth year course in psychology at Swinburne. Value: $100.

The A.F.E. Tylee and the K. Kennewell Memorial Prizes
These are awarded in the fields of social science, mathematics and civil engineering.

The Profile Management Consultants Prize
Awarded to the second or third year student whose research project most convincingly demonstrates the ability to undertake applied research using appropriate methodology and techniques. Value: $500.

Reading guides

In most subjects, conveners will issue detailed reading guides during the first week of classes. However, reading material is listed under individual subject entries according to the following definitions.

Preliminary reading — introductory material which students are expected to read before the subject classes commence.

Textbooks — material essential to the subject, but students are advised not to purchase any textbooks until classes have met.

References — material referred to throughout the duration of the subject. Students are not required to purchase references and copies of the majority are available for borrowing from the library.

Submission of assignments

Students should note that assignments will not be accepted by facsimile (fax).

Assessment

The details of the methods of assessment for each subject are issued by the lecturers in charge. Usually, a combination of progressive assessment and examinations is employed.

Leave of absence from all study

Bachelor of Arts

Students who wish to apply for leave of absence from the Bachelor of Arts degree course should complete a Leave of Absence form and submit it to the Assistant Registrar (Arts).
The application should clearly indicate the reasons for the request and the length of time for which leave is sought. For subjects which conclude at the end of first semester the form should be lodged not later than 31 March 1994. For subjects which conclude at the end of second semester — not later than 31 August 1994. Failure to make formal application before the specified date(s) will result in a fail being recorded for those subjects in which the student is enrolled, unless special permission to cancel the enrolment without penalty of fail has been given by the Assistant Registrar (Arts).

Leave of absence of more than two consecutive semesters will not be approved. A student who feels aggrieved by the decision concerning a request for leave of absence may appeal to the Dean of the Faculty.

Graduate Diploma

Usually, leave of absence is granted to graduate diploma students only if one semester of their course has been completed.

Withdrawal from all study

Students wishing to withdraw from all study must lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915), or the Student Administration Office, and return their identity cards. (For further details see under the section headed ‘Enrolment regulations:’)

Change of enrolment status

Students may change their enrolment status from part-time to full-time, or vice versa, at the beginning of a semester. Applications should be made to the Assistant Registrar, Faculty of Arts.

Amendment to enrolment

Students may amend their subject selection by completing an Amendment to Enrolment form which must then be approved by the Assistant Registrar, Faculty of Arts. Students will not be permitted to add or change subjects after the second week of classes. The Assistant Registrar may permit late enrolment in exceptional circumstances.

To withdraw from a subject or subjects students must lodge a completed Amendment to Enrolment form by the date specified for each semester, or a fail result will be recorded. For a subject which concludes at the end of the first semester — not later than 31 March 1994. For a subject which concludes at the end of the second semester — not later than 31 August 1994. (For further details see under the section headed ‘Enrolment regulations’ pages 32 to 34).

Deferment

For information regarding deferment of Bachelor of Arts subjects see page 133.

Deferment is not granted to students who have been offered a place in postgraduate studies.

Subject length

UNLESS STATED OTHERWISE ALL SUBJECTS ARE SEMESTER SUBJECTS.

Undergraduate course information

N060 Associate Degree in Social Science

The Associate Degree in Social Science is accredited and awarded by Swinburne University of Technology. The course is provided by Billanook College, Mooroolbark; Eastern College, Heathmont; and Glenfern College, Ferntree Gully in affiliation with Swinburne University of Technology.

Graduating students would be prepared for a number of occupations within a range of administrative and service employment positions, in a variety of employment contexts. The associate degree generally involves two years of full-time study. Part-time study may be arranged with individual course providers. To qualify for the award of the associate degree students are required to complete the program of study as outlined.

Course aims

The course is designed to give students the necessary background, knowledge and skills to allow them to perform in a range of administrative and service employment contexts. The course will develop the students’ ability to:

- collect and organise information
- analyse and interpret social and statistical data
- conceptualise and analyse problems and issues
- communicate in oral and written forms
- use appropriate information technology
- work and manage effectively in an organisation
- work as part of a team
- deal appropriately with members of the public.

The course provides students with a working knowledge of major social processes (e.g., Australian political and legal systems, social structures, patterns of social inequality) and organisational dynamics. The course is particularly appropriate for people who are employed or seeking employment in:

- administrative jobs in either public or private sectors
- service delivery to the public (especially through government bodies but also in quasi-government and private organisations which deal with the public)
- public relations, information provision or media liaison
- jobs which require research skills and carry responsibility for contributing to the processes of policy development, implementation, monitoring and evaluation.

The associate degree provides basic skills in the areas listed above but its structure anticipates the fact that these areas extend into high levels of professional competence which cannot be covered by associate degree level education.

Articulation arrangements

Students who complete the Associate Degree in Social Science will be eligible to apply for entry into Swinburne’s Bachelor of Arts degree (BA) but will not automatically be selected. Those who are selected will be eligible for credit transfer of up to one and a half years of the BA degree, depending on the subjects taken as part of the degree and the BA majors taken.

Course description

The associate degree is a two-year full time course (or equivalent) with a combination of core subjects plus specialist streams. The core would be completed in the first year, the chosen stream in the second year of study. There are four streams in the associate degree:
1. Administration and management
2. Human services
3. Planning and policy
4. Public relations

Students choose one of the four streams. Most subjects are part of a list of prescribed offerings but in both the core and the streams, some electives can be chosen. The lists of electives for the various streams are overlapping — a subject may be compulsory in one stream but an elective in another. Language study must be taken over a whole year (for two semesters) and counts as two elective subjects.

Note: Individual school providers will need to assess the viability of offering all of the four streams at any one time. Providers may not be able to offer all streams in the same year.

**Entry requirements**

Applicants in the following categories will be considered for admission to the Associate Degree in Social Science course:

**VCE**

Selection of applicants may be determined on the basis of their performance and results in Year 12, which will be a pass in four VCE studies including Units 3 and 4 of English accredited by the Victorian Curriculum and Assessment Board (VCAA). (Passes may be accumulated over more than one year.) In addition selection may involve a written application and/or an interview.

**Special entry**

Persons 21 years and over. Applications will be considered by a selection committee which will evaluate each applicant's likelihood of completing the course. The selection committee will take into account an applicant's educational background, employment background, and written reasons for wishing to undertake the associate degree course. A quota for this type of entry may be applied.

Persons under 21 years who have completed studies deemed by the course providers and the University to be the equivalent of Year 12. Applications will be considered by a selection committee which will evaluate each applicant's likelihood of completing the course. The selection committee will take into account an applicant's educational background, employment background, and written reasons for wishing to undertake the associate degree course. A quota for this type of entry may be applied.

Persons who do not meet the above criteria should, in the first instance, consult with the Course Co-ordinator at Swinburne University of Technology. The management of Billanook College, Eastern College and Glenfern College reserve the right to accept applicants from special categories consistent with the guidelines set down by Swinburne University of Technology.

**Course structure**

**Core studies**

(To be undertaken in first year)

The core studies undertaken in the first year are designed to provide all students with a basic understanding of major elements of Australian society and the economy, and with fundamental skills required for administrative and service employment.

**Compulsory subjects:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD100</td>
<td>Analysis and Argument</td>
</tr>
<tr>
<td>AD101</td>
<td>Australian Government</td>
</tr>
<tr>
<td>AD102</td>
<td>Australian Society, the Economy and the Environment — 1</td>
</tr>
<tr>
<td>AD103</td>
<td>Australian Society, the Economy and the Environment — 2</td>
</tr>
<tr>
<td>AD104</td>
<td>Communication Skills</td>
</tr>
<tr>
<td>AD105</td>
<td>Individuals, Groups and Organisations</td>
</tr>
<tr>
<td>AD106</td>
<td>Using Information Technology — 1</td>
</tr>
<tr>
<td>AD107</td>
<td>Using Information Technology — 2</td>
</tr>
<tr>
<td>AD108</td>
<td>Issues in Multicultural Australia</td>
</tr>
<tr>
<td>AD1091</td>
<td>Language Other than English (counts as two electives)</td>
</tr>
<tr>
<td>AD110</td>
<td>Technology and Society</td>
</tr>
<tr>
<td>AD111</td>
<td>Understanding the Mass Media</td>
</tr>
<tr>
<td>AD112</td>
<td>Language Other than English (counts as two electives)</td>
</tr>
</tbody>
</table>

**Streams**

(To be undertaken in second year)

In the second year students choose one of four course streams which relate to more specific areas of employment. Each stream includes a number of compulsory subjects as outlined below, but allows students to choose from among the whole range of subjects available across the stream including further study of Language Other than English.

**Administration and Management**

**Compulsory subjects:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD200</td>
<td>Behaviour in Organisations</td>
</tr>
<tr>
<td>AD203</td>
<td>Economic Decision-making in the Enterprise</td>
</tr>
<tr>
<td>AD204</td>
<td>Equity and Opportunity in Australian Society</td>
</tr>
<tr>
<td>AD206</td>
<td>Industrial Relations</td>
</tr>
<tr>
<td>AD208</td>
<td>Negotiation and Change Management</td>
</tr>
<tr>
<td>AD209</td>
<td>Report Writing</td>
</tr>
</tbody>
</table>

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Human Services**

**Compulsory subjects:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD200</td>
<td>Behaviour in Organisations</td>
</tr>
<tr>
<td>AD202</td>
<td>Data Usage and Interpretation</td>
</tr>
<tr>
<td>AD204</td>
<td>Equity and Opportunity in Australian Society</td>
</tr>
<tr>
<td>AD205</td>
<td>Health and Illness</td>
</tr>
<tr>
<td>AD208</td>
<td>Negotiation and Change Management</td>
</tr>
<tr>
<td>AD209</td>
<td>Report Writing</td>
</tr>
</tbody>
</table>

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Planning and Policy**

**Compulsory subjects:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD202</td>
<td>Data Usage and Interpretation</td>
</tr>
<tr>
<td>AD203</td>
<td>Economic Decision-making in the Enterprise</td>
</tr>
<tr>
<td>AD204</td>
<td>Equity and Opportunity in Australian Society</td>
</tr>
<tr>
<td>AD206</td>
<td>Industrial Relations</td>
</tr>
<tr>
<td>AD209</td>
<td>Report Writing</td>
</tr>
<tr>
<td>AD210</td>
<td>Research Skills</td>
</tr>
</tbody>
</table>

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Public Relations**

**Compulsory subjects:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD201</td>
<td>Culture and Ideas</td>
</tr>
<tr>
<td>AD203</td>
<td>Economic Decision-making in the Enterprise</td>
</tr>
<tr>
<td>AD207</td>
<td>Information Systems, Society and Technology</td>
</tr>
<tr>
<td>AD209</td>
<td>Report Writing</td>
</tr>
<tr>
<td>AD210</td>
<td>Research Skills</td>
</tr>
<tr>
<td>AD211</td>
<td>Writing and Producing for Public Release</td>
</tr>
</tbody>
</table>

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Application procedure**

All applications for a full-time or part-time place for all entry categories in the associate degree course must be made through the Victorian Tertiary Admissions Centre, 40 Park Street, South Melbourne 3205 by September. All applicants...
for special entry categories must also apply through VTAC; however, any additional information to support the application may be sent directly to the Course Coordinator at Swinburne University of Technology. Late applications may be considered if places are available. All applicants should note that in addition to the VTAC application form, a personal statement is also required. Details about any of these costs should be obtained from the course providers at Billanook, Eastern and Glenfern Colleges.

The full-time tuition fees are expected to be $2,400 for each year. Individual course providers may include other costs for services provided. Details about any of these costs should be obtained from the course providers at Billanook, Eastern and Glenfern Colleges.

Fees

The full-time tuition fees are expected to be $2,400 for each year. Individual course providers may include other costs for services provided. Details about any of these costs should be obtained from the course providers at Billanook, Eastern and Glenfern Colleges.

No50 Bachelor of Arts

General information

Status

Full-time
The Bachelor of Arts course requires three years of full-time study, during which time twenty semester subjects or equivalent in full-year subjects must be passed.

Part-time
Many students undertake their courses by part-time study. This would usually take five years, but the time may vary according to the study time available to the student.

Career opportunities

The course is designed to foster individual student development, to develop skills and encourage investigation and enquiry which may be applied to a range of situations. Arts students learn how to gather, synthesize and assess information, how to conceptualise issues, and to express themselves effectively both orally and in writing.

Students may select courses which would be of particular value in following a career in such fields as administration, personnel, publishing, public relations, media or allied work, and research services, or they may proceed to the degree of Master of Arts and Doctor of Philosophy. Graduates, after further study, may gain qualifications to become, for example, psychologists, librarians, sociologists or teachers.

Mooroolbark campus

Edinburgh Road, Lilydale 3140
The Faculty of Arts offers a Bachelor of Arts degree program at the Mooroolbark campus. Students enrolled here may take majors in psychology, media studies, sociology, economics, literature, philosophy and cultural inquiry, and political studies.

Currently Mooroolbark campus students who wish to study a language (Japanese, Korean, Vietnamese or Italian) must secure a place at the Hawthorn campus and be prepared to travel between campuses. The full range of subjects listed at the end of this section will not always be offered at the Mooroolbark campus.

It may not always be possible for students to complete the third year of a major on that campus. Classes are offered to full-time and part-time students in the day only at the Mooroolbark campus.

Enquiries regarding the Bachelor of Arts program at the Mooroolbark campus can be directed to:

Arts/Business Administration Officer on 728 7132
Arts Program Director — Mooroolbark campus on 728 7133 or
Swinburne Publicity and Information Unit on 819 8444.

Eligibility

Applicants in the following categories will be considered for admission to the Bachelor of Arts degree course.

VCE

Grade D or better in four VCE subjects, including English. (Passes may be accumulated over more than one year)

Selection of applicants of this type will be determined on the basis of their approved tertiary entrance score. A faculty quota for this type of entry will be applied.

Mature-age entry

Persons 21 years and over, and who may lack formal educational qualifications may apply. Applications will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each applicant's likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant's stated educational background, employment background, together with the written reasons for wishing to undertake the Swinburne Bachelor of Arts degree. A faculty quota for this type of entry will be applied.

Special entry

Persons under twenty-one years who have completed studies deemed by the University to be the equivalent of Year 12 may apply. Applications will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each applicant's likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant's stated educational background, employment background, together with the written reasons for wishing to undertake the Swinburne Bachelor of Arts degree. A faculty quota for this type of entry will be applied.

Application procedure

Full-time all years — to Victorian Tertiary Admissions Centre (WAC), 40 Park Street, South Melbourne 3205
Part-time all years — to VTAC (as above)

Prospective students should ascertain the relevant closing dates for applications in September of the year preceding that in which they would like to commence studies.

Single subject study

It is possible to study a subject offered by the Arts Faculty without enrolling in the Bachelor of Arts degree. An application form is required for this, and is available from the Arts Faculty Office. Such subjects may be credited subsequently towards a Swinburne degree or diploma if approved by the Arts Faculty Board. A substantial tuition fee is payable.

Entry for all eligibility categories is competitive. Applicants may be asked to attend an interview in connection with their application.

Deferred entry

Students who have been offered a place in the Bachelor of Arts course for the first time may apply to defer their entry to the course for up to one year. Applications should be
made in writing to the Registrar as soon as the offer of a place is received.

When an application is approved, the student concerned will be notified in writing by the Assistant Registrar.

Exemptions

Students with certain recognised tertiary qualifications may be granted exemptions after applying to the Arts Faculty Board. In special cases, exemptions from named full-year and/or semester subjects are allowed, but general exemptions may also be granted which provide for a reduction in the total number of subjects to be studied. Students who have been granted four or more exemptions must take all remaining subjects within the Faculty of Arts.

Students who think they may be eligible should apply for exemptions when they first enrol, presenting documentary evidence of prior qualifications. Applications should be made by completing the Exemptions form available from the Faculty of Arts Office (BA915) or the Student Administration Office and lodging it with the Assistant Registrar (Arts).

The exemptions policy of the Faculty of Arts is as follows:

1. Preamble

The Arts Faculty Board, after considering applications from students enrolled in the Faculty of Arts, may grant exemptions in relation to the award of the Swinburne Bachelor of Arts degree.

Notwithstanding any exemptions granted, students must complete a full third year of study in each of two (2) majors approved by the Arts Faculty Board plus any additional subjects necessary to satisfy requirements for the Swinburne Bachelor of Arts degree.

Applications for exemptions will normally be of two kinds: those based upon incomplete qualifications and those based upon completed qualifications.

The exemptions granted will be of two kinds: named and general. Named exemptions will only be granted following recommendations from the appropriate subject leader(s) that the applicant has satisfied equivalent requirements for a pass in the named Swinburne subject(s).

General exemptions may be used towards satisfaction of the requirement that twenty semester subjects or equivalent are needed for a Bachelor of Arts degree. They cannot be used as parts of a major sequence. Students who are granted six (6) general exemptions may use four (4) at stage one and two (2) at stage two; they may not be used at stage three. For arts-related studies (2.1) general exemptions require the recommendation of the appropriate dean.

2. Applications on the basis of incomplete qualifications

Applicants possessing incomplete qualifications normally fall into two categories: those with passes in arts-related studies (see para. 2.1) and those with passes in non-arts related studies (see para. 2.2). Students may apply for exemptions under one category or the other, but not both.

2.1 Arts-related studies

Named or general exemptions may be granted by the Arts Faculty Board for subjects successfully completed elsewhere which are comparable with those comprising the Swinburne Bachelor of Arts degree. Exemptions will only be granted following recommendation from the appropriate subject co-ordinators. The maximum value of exemptions possible of this type will be fourteen (14) semester subjects or equivalent.

Exemptions will not normally be awarded for subjects passed more than ten (10) years prior to the date of the applicant’s admission to the Faculty of Arts.

22 Non-arts related studies

The Arts Faculty Board may grant a general exemption to the value of four (4) semester subjects or equivalent to applicants who have successfully completed one (1) year or more of full-time study (or equivalent) at degree level in courses unrelated to an arts degree.

An applicant may seek to have included within the four (4) semester subjects or equivalent of general exemption credit for named exemptions from specific subjects taught by the Arts Faculty, provided that the studies on which the exemption claim is based were completed less than ten (10) years prior to the date of the applicant’s admission to the Faculty of Arts.

Such named exemptions will only be granted following recommendations from the appropriate subject co-ordinators that the applicant has satisfied equivalent requirements for a pass in the named Swinburne subject(s).

3. Applicants with completed qualifications

It is possible for an applicant to be granted exemptions in respect of only one completed qualification to a maximum value of six (6) semester subjects or equivalent towards the award of Swinburne Bachelor of Arts degree. Such exemptions may be granted irrespective of the date of award and whether or not the completed qualification was taken in an arts-related field.

The following are the entitlements for exemptions for applicants with completed qualifications:

<table>
<thead>
<tr>
<th>Category</th>
<th>Completed Qualification</th>
<th>Semester subjects or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Bachelors degree of at least three (3) years full-time tertiary study (or equivalent).</td>
<td>6</td>
</tr>
<tr>
<td>(b)</td>
<td>Diploma of at least three (3) years full-time tertiary study (or equivalent).</td>
<td>6</td>
</tr>
<tr>
<td>(c)</td>
<td>Associate diploma of 2 years full-time tertiary study (or equivalent).</td>
<td>4</td>
</tr>
<tr>
<td>(d)</td>
<td>Graduate qualifications of at least one (1) year full-time tertiary study (or equivalent).</td>
<td>2</td>
</tr>
</tbody>
</table>

Under Swinburne articulation arrangements students who have completed certain Swinburne Tafe courses may be eligible for up to six exemptions. Contact the Arts Faculty Office for details.

The Arts Faculty Board may consider applications based on qualifications not listed above and award exemptions as it deems appropriate.

Within the total unit value for exemptions granted on the basis of completed qualifications, an applicant may apply for exemptions from specific subjects taught by the Faculty of Arts, provided that the studies on which the exemption claim is based were completed less than ten
(10) years prior to the date of the applicant's admission to the Faculty of Arts. Such named exemptions will only be granted following recommendations from the appropriate subject co ordinators that the applicant has satisfied equivalent requirements for a pass in the named Swinburne subject(s).

4. General
Application for Exemption forms are available from the Arts Faculty Office (BA915).

It is the responsibility of the applicant to complete the Application for Exemption form and attach the following information:

(i) original transcripts (or notarised statement) showing results for those subjects in respect of which exemption is sought;
(ii) information concerning the content of the subjects passed, e.g. handbook copy, course outlines or syllabuses, etc.

Verified translations should accompany documents in languages other than English.

Applications received which do not provide appropriate documentation will not be processed.

5. Subjects undertaken outside the Faculty in relation to exemptions
Students who have been granted four or more exemptions must take all remaining subjects within the Faculty of Arts.

Students with less than four exemptions may take some subjects outside the Faculty but the total of these subjects plus exemptions shall not exceed four.

6. Implementation
All applications for exemptions are considered by the Exemptions Sub-committee. The Exemptions Sub-committee comprises the Chairman of the Arts Faculty Board, (or nominee) and the Assistant Registrar (Arts).

Applications which are covered by the policy are presented to the Arts Faculty Board as 'routine' applications with a recommendation from the Exemptions Sub-committee for approval. Applications which are not covered by the policy are presented to the Arts Faculty Board as 'non-routine' applications and are accompanied by a recommendation from the Exemptions Sub-committee for the Arts Faculty Board's consideration.

Terminology

'Course' — refers to the total of selected subjects in a complete diploma or degree.

'Subject area' — refers to the category under which specific studies are grouped (e.g. psychology, literature).

'Semester subject' — refers to a single half-year unit of study.

'Full-year subject' — refers to a subject which extends over two semesters in one academic year.

'Major' — within one subject area, a full-year of study at stages two and three preceded by either a full-year or one or two semester subjects at stage one.

Subject selection

The onus is on individual students (assisted by course advisers when enrolling) to have completed by the end of their stage three studies, a course which will entitle them to the award of a degree of Bachelor of Arts.

Faculty of Arts subject details are listed, at the end of this section in alpha-numeric order. Provided that course requirements are observed, and provided that places in classes are available, subjects may be selected from the full range. Some subjects are offered at one stage only and for that reason cannot form part of a major, e.g. AJ102 Introduction to Japan — a Cultural Overview.

Subjects taught by departments in other faculties and tertiary institutions may be taken only up to a maximum of four (4) semester subjects or equivalent. These subjects must have the approval of the Assistant Registrar and the head of the department or the chair of the discipline within which the subject is offered.

In special and exceptional circumstances, the Arts Faculty Board may grant approval for more than four semester subjects to be taken outside the Faculty.

The Board may also make an exception in the case of languages and will consider applications from students who wish to take a major in a language other than English at another institution.

(For the purpose of this regulation the subjects SM278 and SM378, Design and Measurement 2A and 3A, and Economics are regarded as subjects within the Faculty of Arts.)

When attending to enrol, students are issued with detailed instructions to assist in planning a suitable course. All students are required to complete enrolment forms (indicating their subject selection for both semesters) and once approved, may not amend their enrolment without the approval of the Assistant Registrar, Faculty of Arts.

A student may not enrol for the third time in a subject which she or he has failed twice (N or NA result).

Subject corequisites (double major students)

Corequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject.

These corequisite subjects must either be completed before students take subjects from stage three, or else studied concurrently with the stage three subject. Any divergence from this requirement must have the approval of the subject convener concerned and the Assistant Registrar (Arts).

Subject prerequisites

Prerequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject.

These prerequisites must be completed before students may take subjects from stages two and three. Any divergence from this requirement must have the approval of the subject convener concerned and the Assistant Registrar (Arts).

Time allocations per week per subject

Each semester subject runs for thirteen weeks. Stage one and stage two subjects involve approximately three hours per week of class attendance and stage three subjects, three to four hours per week of class attendance. More class time is usually required for those subject areas which incorporate laboratory or workshop requirements, for example, Italian, Japanese, Korean, psychology and sociology.

Places in class

Students must ratify their places in a subject by attending class in the first week of the semester or contacting the convener of the subject before the end of the first week. Otherwise, the place may be made available to another student.

The names of the conveners are on the timetable and there is a list in the Faculty Office. Attendance at classes for which a student has not enrolled does not constitute a ground for later enrolment in that subject.
Course requirements/structure

To qualify for the award of the degree of Bachelor of Arts students are required to:

(a) complete two of the following majors —
    Asian Studies
    Australian Studies
    Cultural Studies
    Economics
    Italian
    Japanese
    Korean
    Literature
    Media Studies
    Philosophy and Cultural Inquiry
    Political Studies
    Psychology
    Sociology
    Vietnamese
    or
    a double major in Political Studies.
    A co-major in Psychology/psychophysiology is available. See details on page 140.

(b) gain passes:
    in twenty semester subjects (or equivalent full-year subjects) including a minimum of six semester subjects or equivalent in each of stages one, two and three.
    Note: Students in their first year, who do not take any language studies, are strongly encouraged:
    — if full-time, to select their eight semester subjects from at least six different subject areas;
    — if part-time, to select their four semester subjects from at least three different subject areas.

Students should check the duration and semester subject value of each subject, as set out under subject details at the end of this chapter, in this handbook.

Studies constituting major strands

In economics, Italian, Japanese, Korean, psychology, sociology and Vietnamese majors must include a full year of study at stage one as well as at higher stages. In Asian studies, Australian studies, cultural studies, media studies, literature, philosophy and cultural inquiry and political studies, majors may be constructed with one or two semester subjects at stage one.

In special cases a sequence of studies may be selected from two related subject areas to constitute a major.

Full-time students

(a) A full-time student is usually required to enrol in eight semester subjects at stage one and six semester subjects at stages two and three. In special circumstances, permission may be granted to vary this requirement on application to the Assistant Registrar, Faculty of Arts.

(b) In each year of study full-time students are expected to gain passes in at least six semester subjects in stage one, and at least four in each of stages two and three.

Part-time students

(a) A part-time student is usually required to enrol in four semester subjects in one year. Permission may be granted to vary this requirement on application to the Assistant Registrar, Faculty of Arts.

(b) A part-time student will be considered to have made satisfactory progress if he or she has achieved passes in three semester subjects in a given year.

Progress review

A student who has failed to meet the foregoing requirements may be re-enrolled, with or without conditions, only after discussion with the Progress Review Committee.

A student who has been recommended for exclusion from the course may appeal in writing to the Convener of the Progress Review Committee for special consideration.

A student who feels aggrieved by the decision of the Progress Review Committee may appeal to the Dean of the Faculty.

Course descriptions

Interdisciplinary Majors

The Faculty of Arts offers three interdisciplinary majors: Asian Studies, Australian Studies and Cultural Studies.

Asian Studies

Asian studies incorporates subjects from political studies and Asian languages and cultures. The major focus is on contemporary Asia, with emphasis on political economy and international relations in some subjects, and on the historical-cultural background in other.

The subjects included in the major are listed below. In general, students must complete one subject at stage one, two semester subjects at stage two and three semester subjects at stage three for a major. In the case of the Asian Studies major, students must do at least one Political Studies subject in stage one and one in stage two.

Subjects offered

Stage 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL102</td>
<td>Introduction to Japan — A Cultural Overview</td>
</tr>
<tr>
<td>AK102</td>
<td>Traditional Korea</td>
</tr>
<tr>
<td>AP104</td>
<td>Australia and Southeast Asia</td>
</tr>
<tr>
<td>AP114</td>
<td>Australia and Asia</td>
</tr>
<tr>
<td>AP115</td>
<td>Introduction to Modern Asia</td>
</tr>
</tbody>
</table>

Stage 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>AK207</td>
<td>Korean Society</td>
</tr>
<tr>
<td>AK208</td>
<td>Korean Politics and Economy</td>
</tr>
<tr>
<td>AP202</td>
<td>Europe, Capitalism and the Third World</td>
</tr>
<tr>
<td>AP204</td>
<td>Modern Japan</td>
</tr>
<tr>
<td>AP206</td>
<td>Politics of China A</td>
</tr>
</tbody>
</table>

Stage 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP304</td>
<td>Japan in Asia</td>
</tr>
<tr>
<td>AP311</td>
<td>Politics of China B</td>
</tr>
<tr>
<td>AP312</td>
<td>Problems of Contemporary Southeast Asia</td>
</tr>
<tr>
<td>AP313</td>
<td>India: Uneven Development</td>
</tr>
</tbody>
</table>

Australian Studies

As an interdisciplinary major, Australian studies allows students to explore the contours of modern Australia by taking a combination of three compulsory and choosing three optional semester subjects from literature, media, philosophy and cultural inquiry, political studies and sociology.

A major consists of one semester subject at stage one, two semester subjects at stage two and three semester subjects at stage three.

The three compulsory subjects, which form a core sequence in the major, are AP112 Australian Identities, AP207 Modern Australia and AP314 Work in Australia. In this sequence students examine several of the political, social, economic and cultural influences which have shaped contemporary Australian society.

To complete the six semester subjects which are necessary for a major, students must choose three more semester subjects from the options listed below. In choosing optional subjects at level three, students must have completed the prerequisites for those subjects at level two. For example, students who wish to take AL302 Australian Literature — 19th Century and AL303 Australian Literature — 20th Century for their Australian studies major must have completed AL202 Contemporary Australian Writing. Similar conditions apply to subjects offered by other disciplines.
Students may not double count subjects for two majors. For example, AP207 cannot be counted for both the Australian studies and political studies majors. It can only be counted for one.

**Subjects offered**

**Stage 1**
- AP112 Australian Identities (compulsory)
- AP100 Australian Politics

**Stage 2**
- AP207 Modern Australia (compulsory)
- AL202 Contemporary Australian Writing
- AM207 Cultural Representation in Australia
- AH206 Society, Culture and Resources
- AS200 Social Change
- AS204 Models of Sociological Analysis

**Stage 3**
- AP314 Work in Australia (compulsory)
- AL302 Australian Literature — 19th Century
- AL303 Australian Literature — 20th Century
- AM300 Cinema Studies
- AH306 Practical Ethics
- AH307 Australian Science and Society
- AP308 Seminar in Political Studies
- AS304 Sociology of Minorities
- AS307 Sociology and Social Policy

**Cultural Studies**

The cultural studies major is an interdisciplinary major which provides students with the theoretical understanding, the skills of critical analysis, and the diversity of disciplinary approaches appropriate to the study of culture.

The major in cultural studies comprises (a) at stage one: at least one of the core subjects from the stage one options listed below; (b) at stage two: AH204 Philosophy of Culture (core subject) together with any one subject from the stage two subjects listed below; (c) stage three: AH310 Approaches to Culture (core subject) together with any other two subjects from the stage three subjects listed below.

In choosing subjects at stages one, two and three, students should ensure that any relevant prerequisite subjects have been completed.

Students may not double count subjects for two majors. For example, if AL100 Twentieth Century Literature is counted as part of a literature major, it cannot be double counted as part of a cultural studies major.

**Stage 1**
- Core subjects
  - Any one of the following
    - AA102 Understanding Italy
    - AH101 History of Ideas
    - AL100 Twentieth Century Literature
    - AM102 Media and Meanings: An Introduction
    - AP112 Australian Identities

**Stage 2**
- Core subject
  - AH204 Philosophy of Culture
- Other subjects
  - AA208 Twentieth Century European Literature & Thought
  - AH205 Social Philosophy, Politics and Ethics
  - AH206 Society, Culture and Resources
  - AL203 Renaissance Literature
  - AM203 Popular Culture
  - AM204 Media and Australian Society
  - AP202 Europe, Capitalism and the Third World
  - AS204 Models of Sociological Analysis
  - AS206 Sex and Gender in Society

**Stage 3**
- Core subject
  - AH310 Approaches to Culture
- Other subjects
  - AH308 Social Studies of Science
  - AH311 Natural Philosophy and the Sciences
  - AH313 Environmental Philosophy
  - AL304 Cross Cultural Perspectives
  - AM300 Cinema Studies
  - AS302 Sociology of Organisations

**Asian Languages and Cultures**

**Japanese**

With the deepening of relations between Australia and Japan on many levels, it is advisable that a study of Japanese language, both spoken and written, be undertaken by a greater number of Australians. Furthermore, it is important that a knowledge and understanding of Japan is increased in Australia. The Japanese programs train students to communicate effectively in Japanese and provide the opportunity to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.


Students undertaking a major in Japanese are strongly advised to enrol also for AJ102 Introduction to Japan — A Cultural Overview and AJ202 Communication in Japanese, which provide an essential background to Japanese language and culture, in the following order:

(i) AJ102 Introduction to Japan — A Cultural Overview which is offered in both semesters concurrently with the first year subjects of each stream;

(ii) AJ202 Communication in Japanese — which is offered in both semesters concurrently with the second year subjects of each stream.

AJ102 Introduction to Japan — A Cultural Overview is also available to those not undertaking the full Japanese language course.

AP204, Modern Japan, offered by Political Studies is also highly recommended.

The language subjects offered in Japanese have been specifically designed for non-native speakers of the Japanese language. These subjects will not meet the needs of native speaker of Japanese. Students with native proficiency in a language taught at Swinburne will not normally be eligible to enrol in that language.

**Subjects offered**

**Stage 1**
- AJ102 Introduction to Japan — A Cultural Overview
- AJ103 Japanese 1A
- AJ104 Japanese 1B
- AJ105 Advanced Japanese 1A
- AJ106 Advanced Japanese 1B

**Stage 2**
- AJ202 Communication in Japanese
- AJ203 Japanese 2A
- AJ204 Japanese 2B
- AJ205 Advanced Japanese 2A
- AJ206 Advanced Japanese 2B
Stage 3
AJ302 Work Experience in Japan (only available to BBus/BA (Japanese) students)
AJ1303 Japanese 3C
AJ1304 Japanese 3D
AJ1305 Advanced Japanese 3C
AJ1306 Advanced Japanese 3D
AJ1307 Reading Japanese Newspapers
AJ1308 Japanese for Tourism and Hospitality
AJ1309 Japanese for Business and Industry

Note: Students whose stage two results are credit or above in either the beginners or the advanced streams may choose to study the equivalent of AJ303, AJ304 or AJ305 at an approved tertiary institution in Japan. A scholarship scheme has been established to enable students to undertake this alternative.

Korean

The course offers three years of systematic language training to enable students to communicate effectively in modern spoken Korean, and to read fluently a wide range of modern written material in Korean.

Supporting subjects provide the opportunity to supplement language studies with courses on culture, society, economy and politics.

The subjects AK103, AK104, AK205, AK206, AK303, AK304, and AK305 form a degree major in Korean.

Students intending to complete a major should enrol in the first instance in AK103 and AK104.

Students undertaking a major in Korean are also strongly advised to enrol for subject AK102 Traditional Korea, which is offered in the second semester. This subject is also open to students not undertaking the full Korean language sequence.

Since language studies at Swinburne are designed for beginners, students with native proficiency in a language taught at Swinburne will not normally be eligible to enrol in that language.

All incoming students in Korean will be assessed in terms of their expertise in the language. Those students who display a high level of competence in this regard may be required to study an alternative syllabus to that shown in this Handbook.

If a student requests exemption from any part of a Korean subject no credit will be granted unless the student has previously completed studies which are part of a degree program studied at a recognised institution.

Subjects offered
Stage 1
AK102 Traditional Korea
AK103 Korean 1A
AK104 Korean 1B

Stage 2
AK205 Korean 2A
AK206 Korean 2B
AK207 Korean Society
AK208 Korean Politics and Economy

Stage 3
AK303 Korean 3C
AK304 Korean 3D
AK305 Reading Korean Newspapers

Vietnamese

In 1994 the Faculty of Arts will offer stage one and stage two subjects of a major sequence in Vietnamese.

The course is designed to acquaint students with Vietnamese, an important community and trade language. The broad aim of the course is to provide students with communicative competence in the language together with knowledge and understanding of Vietnam.

The beginners stream consists of AV103, AV104 at stage one. AV203, AV204 at stage two, then AV303, AV304 and AV306 at stage three. Normally AV303 and AV304 are taken prior to or concurrently with AV306.

Subjects related to Vietnamese studies may also be offered, and students are advised to check with the faculty for information.

It should be noted that the Vietnamese major is sequential in nature. Students must complete both subjects in stage one before enrolling in stage two subjects, and these, in turn, must be completed before enrolling in the stage three subjects.

Subjects offered
Stage 1
AV103 Vietnamese 1A
AV104 Vietnamese 1B

Stage 2
AV203 Vietnamese 2A
AV204 Vietnamese 2B

Stage 3
AV303 Vietnamese 3A
AV304 Vietnamese 3B
AV306 Reading Vietnamese Newspapers

Stage three subjects will not be offered in 1994.

Italian Language and Culture

This course is designed to acquaint students with Italian, an important commercial, community and cultural language. The broad aim is to enable students to communicate with Italians, on both linguistic and socio-cultural levels. The major study in Italian therefore strongly emphasises language acquisition, and progressively treats those aspects of Italian language, literature, history, geography, economics, sociology, politics and culture appropriate to an understanding of the modern nation and its inhabitants. A degree major in Italian may be obtained by undertaking studies in one or two streams offered: a beginner's stream and a post-VCE stream.

A beginners' stream consists of AA109 and AA110 at stage one, followed by AA209 and AA210 of stage two, then AA309 and AA310 at stage three. Normally AA309 and AA310 are completed prior to, or concurrently with AA313.

The post-VCE stream requires a pass and above at VCE level or equivalent and consists of AA106 and AA107 at stage one, followed by AA206 and AA207 at stage two, then AA306 and AA307 at stage three. Normally AA306 and AA307 are completed prior to, or concurrently with AA313.

Students undertaking a major in Italian are also strongly advised to enrol for AA102 Understanding Italy and AA205 The European Community.

The following subjects related to Italian studies are also offered:
AA208 Twentieth Century European Literature and Thought
AA308 Italian Business Practice
AA312 European Community 2

It should be noted that the Italian major is sequential in nature. Therefore students must complete both subjects in stage one Italian before enrolling in the stage two subjects and these, in turn, must be completed before enrolling in the stage three subjects.
The approach in media studies is essentially analytical and critical, although students can acquire hands-on skills in publishing and radio production during the later stages of the course.

The course is arranged in two streams. The first stream, introduced by AM102, is concerned with textual analysis, cultural studies and critical theory, focusing mainly on film and TV. After completing AM102, students taking this stream may choose two semester subjects from AM203, AM205, AM206 and AM207. They may then choose three from AM300, AM302, AM303, AM306 and AM309. The second stream, introduced by AM103, concentrates on the media as a social institution, covering media ownership and regulation, the history of broadcasting and the role of telecommunications in contemporary society. After completing AM102, students taking this stream may choose two semester units from AM202, AM205, AM206 and AM207. They may then choose three from AM302, AM303, AM306, AM307 and AM309.

Whilst planning of streams is desirable, students need only one stage one subject, either AM102 or AM103, as a prerequisite for stage two.

Students wishing to select later year subjects from both streams, rather than specialising in one, should complete both stage one prerequisites (AM102 and AM103). The hands-on production subjects are available to students in both streams.

Enrolment into AM306, which is applicable to both streams, is based on selection from applicants at the end of first semester.

Subjects offered

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<td>(Not available to students who have previously passed AM308 Local Press, Production &amp; Politics)</td>
<td>Community Press: Process and Production</td>
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Philosophy and Cultural Inquiry

The subjects offered by philosophy and cultural inquiry draw on the traditional disciplines of philosophy, the history of ideas, and the history and philosophy of science. They are designed to introduce students to the techniques of philosophical inquiry and analysis, and to some of the important cultural and intellectual developments which have shaped our lives and the way we see ourselves in relation to the world. Many of the subjects give particular emphasis to the interrelationships between science, technology and culture, both from a historical and from a contemporary perspective.

In addition to opening up new perspectives on our lives and our culture, philosophical inquiry develops practical skills in critical and creative thinking, reasoning and argument, and conceptual analysis. These skills not only play an important
part in complementing studies in other subject areas, but are also of great value in both professional and personal life. A major in philosophy and cultural inquiry comprises one semester subject at stage one, two semester subjects at stage two, three semester subjects at stage three.

Some of the subjects offered below also may be used to construct majors in Australian studies or in cultural studies. (See page 136 of this handbook.) Note, however, that students may not double count subjects for two majors. For example, if AH204 Philosophy of Culture is counted as part of a major in philosophy and cultural inquiry, it cannot at the same time be counted as part of a major in cultural studies.

Subjects offered

Stage 1

AH100 Introduction to Philosophy
AH101 History of Ideas
AH102 Theories of the Universe
AH103 Critical Thinking

Stage 2

AH201 Mind Language and Thought
AH203 Nature and Human Nature
AH204 Philosophy of Culture
AH205 Social Philosophy, Politics and Ethics
AH206 Society Culture and Resources

Stage 3

AH301 Rationale
AH306 Practical Ethics
AH307 Australian Science and Society
AH308 Social Studies of Science
AH309 Special Topics in Philosophy
AH310 Approaches to Culture
AH311 Environmental Philosophy
AH312 Natural Philosophy and the Sciences
AH313 Knowledge, Science and Reality

Political Studies

Political studies is concentrated into two principal areas, Australia and Asia. The subjects offered set the political and historical dimensions of the societies studied in the broad economic and social contexts. Students may choose from a variety of subjects, but there are three themes around which they may decide to concentrate their studies. They are:

(a) the politics of modern industrial society with an emphasis on Australian politics and society, e.g. AP100, AP101, AP112, AP200, AP201, AP207, AP300, AP308, and AP314.

(b) social and political change in Asia, e.g. AP114, AP204, AP206, AP304, AP307, AP311 and AP312.

(c) political economy of capitalist development with examples from third world and industrialised societies, e.g. AP115, AP202 and AP313.

The political studies area allows a critical and evaluative view of the whole structure of our society in the late twentieth century. By focusing on Australian society and, at the same time, providing a variety of perspectives on Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our relationships with Asian neighbours.

Students may take single semester subjects, a major, or a double major in political studies. A major consists of at least one semester subject at stage one, at least two semester subjects at stage two and three semester subjects at stage three. A double major consists of at least two semester subjects at stage one, at least four semester subjects at stage two and six semester subjects at stage three.

In stage one students may enrol in one or more of the five subjects offered, but two stage one political studies subjects are required as prerequisites for four or more stage two subjects.

Subjects offered

Stage 1

AP100 Australian Politics
AP101 Foundations of Modern Politics
AP112 Australian Identities
AP114 Australia and Asia
AP115 Introduction to Modern Asia

Stage 2

AP200 Advanced Australian Politics
AP201 Political Sociology
AP202 Europe, Capitalism and the Third World
AP204 Modern Japan
AP206 Politics of China A
AP207 Modern Australia

Stage 3

AP300 Public Policy in Australia
AP303 Politics of the USSR
AP304 Japan in Asia
AP308 Seminar in Political Studies
AP311 Politics of China B
AP312 Problems of Contemporary South-East Asia
AP313 India: Uneven Development
AP314 Work in Australia

Psychology

The undergraduate psychology program provides students with a broad introduction to psychology in all three stages. In stage three, some attention is given to vocational skills and knowledge relevant to applied fields.

The stage one course in psychology introduces students to a range of topics in psychology and experimental design and analysis. Students intending to major in the subject are required to take AY100 Psychology 100 and AY101 Psychology 101. Each of these subjects comprises lectures, practical work and instruction in statistical analysis.

In stage two, AY202 Cognition and Human Performance, AY203 Developmental Psychology and AY204 Social Psychology are offered and for students wishing to major in psychology SM278 Design and Measurement 2A must be taken.

In stage three, subjects offered are AY312 Psychology of Personality, AY319 Psychological Measurement and AY320 Psychological Foundations of Counselling. In addition, students majoring in psychology must take SM378 Design and Measurement 3A.

It should be noted that the undergraduate psychology
program is sequential in nature; completion of the prescribed subjects at one stage of the program is a prerequisite for study at the next level. All subjects offered in this program are semester subjects. Thus a student must complete both stage one psychology subjects before enrolling in any stage two psychology subject, and must complete all stage two psychology subjects before enrolling in any stage three subject. Details of these prerequisite arrangements are shown in entries for all psychology subjects.

Students should note that two of the stage three subjects in psychology are worth half a semester subject toward their degree subject total. These subjects are AY319 and AY320 and all other subjects in psychology are worth one semester subject.

A co-major in psychology and psychophysiology is taught jointly by the Departments of Psychology and Physics. Places on this program are strictly limited and entry to the program is either via the Faculty of Arts leading to the award of a Bachelor of Arts degree or via the Faculty of Applied Science leading to the award of a Bachelor of Applied Science.

Many people take up a career related to psychology after completion of a three-year program, but some choose to undertake further study in order to work specifically as psychologists. In order to be regarded as a professionally trained psychologist in Australia it is becoming increasingly necessary to be eligible for membership of the Australian Psychological Society (APS). The minimum academic requirement for associate membership of the APS is completion of an accredited four-year program of psychological study. The Swinburne Bachelor of Arts and Bachelor of Applied Science psychology majors have APS approval as three year sequences of study and, to become eligible for associate membership of the APS, graduates must then complete an approved fourth-year course. (A list of approved courses is available from the APS.) The Swinburne Graduate Diploma in Applied Psychology is an accredited four-year course and the honours year in Psychology has provisional APS accreditation.

In addition to its undergraduate and fourth-year courses, the Department of Psychology offers a fifth and sixth year part-time coursework program leading to the award of a Master of Arts degree in Counselling Psychology. The Department also offers a Professional Doctorate in Psychology by coursework and thesis, available for full-time study by selected students. The Department also accepts a limited number of suitably qualified candidates, on a full-time or part-time basis, for the degree of Master of Arts and PhD in Psychology by research and major thesis.

**Subjects offered**

**Stage 1**

- AY100 Psychology 100
- AY101 Psychology 101

**Stage 2**

- AY202 Cognition and Human Performance (Not available to students who have previously passed AY313 Cognition and Human Performance)
- AY203 Developmental Psychology (Not available to students who have previously passed AY200 Psychology 200)
- AY204 Social Psychology (Not available to students who have previously passed AY201 Social Psychology)
- SM278 Design and Measurement 2A
- SM279 Design and Measurement 3A
- SM279 Design and Measurement 3A (Not available to students who have previously passed SM279 Design and Measurement 2A)

**Stage 3**

- AY312 The Psychology of Personality
- AY319 Psychological Measurement (Not available to students who have previously passed AY311 Methods and Measures)
- AY320 Psychological Foundations of Counselling (Not available to students who have previously passed AY314 Counselling and Interviewing)
- SM378 Design and Measurement 3A (Not available to students who have previously passed SM279 Design and Measurement 2A)

Note: A list of approved courses is available from the Department of Psychology describing the transition arrangements for students affected by the introduction of AY202 in place of AY313 and SM378 in place of SM279.

Note: SM278 and SM378 must be taken by students wishing to major in psychology for details of the subjects SM278 Design and Measurement 2A (and SM378 Design and Measurement 3A), students should refer to the subject description section at the end of this chapter.

**Co-major in Psychology and Psychophysiology**

Students accepted into the co-major through the Faculty of Arts study the major sequence of psychology subjects described above. In first year, students must take AY100 and AY101. In second year, students must study AY202, AY203, AY204, and SM278, and in third year, AY312, AY319, AY320, and SM378.

The major in psychophysiology is taught by the Faculty of Applied Science. Students should consult the Faculty of Applied Science section of the handbook for details of the psychophysiology subjects constituting this major.

**Sociology**

The sociology course is designed to provide an understanding of the social world in which we live and work. It deals with the individual's place in society and the social processes and institutions which shape individual and group behaviour and attitudes. Developing an understanding of these issues is intellectually rewarding and the conceptual and research skills acquired through the study of sociology are useful in many fields of employment. For example, they are crucial in personnel management, social research, policy analysis and industrial relations.

In stage one sociology, basic concepts of sociology are explained by reference to the sociological analysis of contemporary Australian society. This is a full-year study, consisting of AS100 Sociology 1A and AS101 Sociology 1B.

Students are required to take two stage two subjects to pursue a major in sociology, and must include AS204 Models of Sociological Analysis as one of these.

At stage three, students completing a major must take AS306 Methodology of Social Research plus two of the other subjects offered. Not all of the optional stage two and stage three subjects are run in any one year. Please check the current timetable.

Students who do well in their undergraduate work may apply to be admitted to the Bachelor of Arts (Honours) course in Social Science.

For those students intending to pursue a career in research and policy analysis the Graduate Diploma in Urban Research and Policy is offered. A Master of Arts by coursework in Urban Research and Policy is also offered.
Sociology also offers a Graduate Diploma in Equal Opportunity Administration and accepts suitably qualified applicants for the degree of Master of Arts and PhD in Sociology by research and major thesis.

Details for all these postgraduate studies can be found in the section on Postgraduate Courses.

Subjects offered

Stage 1
AS100 Sociology 1A
AS101 Sociology 1B

Stage 2
AS204 Models of Sociological Analysis
AS205 Sociology of Deviance and Social Control
AS206 Sex and Gender in Society

Stage 3
AS300 Urban Sociology
AS302 Sociology of Organisations
AS303 Current Issues in Sociology
AS306 Methodology of Social Research
AS307 Social Research and Policy
AS308 Migration and Ethnicity

Economics

Economics is offered as a major in the Bachelor of Arts course through the Faculty of Business. Arts students intending to take an economics major must discuss their overall study program with a course adviser in the Faculty of Arts to ensure that their study plans will satisfy the requirements for a degree.

The Department of Economics offers a wide range of subjects/units which may be taken individually as electives or as a minor or major strand over three years.

To complete Faculty of Arts requirements for a major in economics, students must complete BE110 Microeconomics and BE220 Macroeconomics and five additional units, at least two of which are at stage three level. (All stage three units commence with the prefix three.) A minor sequence consists of BE110 and BE220 and three additional units, one of which is at stage three level.

For subject details please see the subjects details section at the end of this chapter.

A057 Bachelor of Business/Bachelor of Arts (Japanese) — double degree

The double degree Bachelor of Business/Bachelor of Arts (Japanese) is of four years (thirty-two units) duration and is designed to enable students to complete the compulsory requirements for any of the business degree streams together with the full range of the available Japanese subjects in order to qualify for the award of two degrees.

Details of the business specialisations available for combination with Japanese are as detailed in the Faculty of Business chapter on pages 205 to 208.

Beginner's stream
AJ103 Japanese 1A
AJ104 Japanese 1B
AJ203 Japanese 2A
AJ204 Japanese 2B
AJ301 Japanese 3A
AJ303 Japanese 3B
AJ304 Japanese 3D

Advanced stream
AJ105 Advanced Japanese 1A
AJ106 Advanced Japanese 1B
AJ205 Advanced Japanese 2A
AJ206 Advanced Japanese 2B
AJ305 Advanced Japanese 3C
AJ306 Advanced Japanese 3D

Both streams
AJ102 Introduction to Japan — A Cultural Overview
AJ202 Communication in Japanese
AP204 Modern Japan
AJ302 Work Experience in Japan (elective)

And one of:
AJ307 Reading Japanese Newspapers
AJ308 Japanese for Tourism and Hospitality
AJ309 Japanese for Business and Industry

The elective subject(s) may be taken from either the Faculty of Arts or Business.

A058 Bachelor of Business/Bachelor of Arts (Italian) — double degree

The double degree Bachelor of Business/Bachelor of Arts (Italian) is of four years (thirty-two units) duration and is designed to enable students to complete the compulsory requirements for any of the business degree streams together with the full range of the available Italian subjects in order to qualify for the award of two degrees.

Details of business specialisations available for combination with Italian are as detailed in the Faculty of Business section on pages 205 to 208.

The subjects offered within the Arts Faculty are as follows:

Beginner's stream
AA109 Italian 1X
AA110 Italian 1Y
AA209 Italian 2X
AA210 Italian 2Y
AA309 Italian 3X
AA310 Italian 3Y

Advanced stream
AA105 Advanced Italian 1A
AA107 Advanced Italian 1B
AA206 Advanced Italian 2A
AA207 Advanced Italian 2B
AA306 Advanced Italian 3A
AA307 Advanced Italian 3B

Both streams
AA102 Understanding Italy
AA205 The European Community
AA208 20th Century European Thought
AA308 Italian Business Practice
AA312 European Community II (elective)
AA313 Contemporary Italy

The elective subject(s) may be taken from either the Faculty of Arts or Business.

A059 Bachelor of Business/Bachelor of Arts (Korean) — double degree

The double degree Bachelor of Business/Bachelor of Arts (Korean) is of four years’ (thirty-two units) duration and is designed to enable students to complete the compulsory requirements for any of the business degree streams together with the full range of the available Korean subjects in order to qualify for the award of two degrees.
Details of business specialisations available for combination with Korean are as detailed in the Faculty of Business section on pages 205 to 208.

The subjects offered within the Arts Faculty are as follows:

- **AK102** Traditional Korea
- **AK103** Korean 1A
- **AK104** Korean 1B
- **AK205** Korean 2A
- **AK206** Korean 2B
- **AK207** Korean Society
- **AK208** Korean Politics and Economy
- **AK300** Korean 3C
- **AK301** Korean 3D
- **AK305** Reading Korean Newspapers

The elective subject(s) may be taken from either the Faculty of Arts or Business.

**Bachelor of Business/Bachelor of Arts (Vietnamese) — double degree**

The double degree Bachelor of Business/Bachelor of Arts (Vietnamese) is of four years (thirty-two units) duration and is designed to enable students to complete the compulsory requirements for any of the business degree streams together with the full range of the available Vietnamese subjects in order to qualify for the award of two degrees.

Details of the business specialisations available for combination with Vietnamese are as detailed in the Faculty of Business section on pages 205 to 208.

The subjects offered with the Faculty of Arts are as follows:

- **AV103** Vietnamese 1A
- **AV104** Vietnamese 1B
- **AV203** Vietnamese 2A
- **AV204** Vietnamese 2B
- **AV303** Vietnamese 3A
- **AV304** Vietnamese 3B
- **AV306** Reading Vietnamese Newspapers

Stage three subjects will not be offered in 1994.

**N052 Bachelor of Arts (Honours)**

The Faculty of Arts offers a Bachelor of Arts honours degree to selected students. This is a fourth year, research oriented course open to students who have completed the requirements for a three year Bachelor of Arts degree. The course will require one year of full-time study or two years of part-time study. Students will be required to complete both coursework and thesis requirements in one of four strands depending on the subjects in which they majored.

**Cultural Studies**

For students who have majored in literature, media studies, philosophy and cultural inquiry, or political studies.

**Languages**

For students who have majored in Italian, Japanese or Korean.

**Psychology**

For students who have majored in psychology.

**Social Sciences**

For students who have majored in media studies, political studies or sociology.

To be accepted for the honours degree, students must have completed all subjects necessary for a three year Bachelor of Arts degree and achieved a high academic standard overall with an excellent record in their major area of study, especially at third year level. Students interested in the honours program should complete an application form (available from the Arts Faculty Office) and submit it by a date in November to be advised. Selection will be made by the Honours Committee.

To achieve a Bachelor of Arts (Honours) students must complete two seminar subjects (Honours Seminars A and B) and two thesis subjects (Honours Thesis A and B). The former include a range of class requirements and each strand has its own requirements. For the thesis subjects, students submit a thesis, which will normally be in the range of 12,000 to 15,000 words. This will be supervised by a member of staff in the area of study.

Final results are given for the year as a whole. Students will be graded as:

- First Class Honours (H1) 85%-100%
- Second Class Honours Division A (H2A) 75%-84%
- Second Class Honours Division B (H2B) 65%-74%
- Third Class Honours (H3) 50%-64%

**Staff**

Honours Year Coordinator
Place the names of the Honours Year Coordinator(s) here.

**Convenors**

Cultural Studies Strand — Dr. Arran Gare
Languages Strand — Dr. Alina Skoutarides
Psychology Strand — Dr. Glen Bates
Social Science Strand — Mr. Kelvin Rowley

**Postgraduate course information**

Application for all postgraduate Faculty of Arts courses should be made on the Postgraduate Application form, available from the Faculty of Arts Office or the Information Office.

**N084 Graduate Diploma in Applied Psychology**

The course is offered as a one year full-time or two years part-time program. It is designed for students who have completed a first degree with a three-year major sequence of studies in Psychology undertaken in a course (or courses) approved for this purpose by the Australian Psychological Society. The program is intended to complete students' foundation studies in psychology as a science and as a profession. The course is designed to prepare students to enter the profession by meeting the educational requirements for Associate Membership of the Australian Psychological Society.

The course has the following objectives:

- (a) to enable students to understand and apply the principles of social science which underlie the discipline of psychology;
- (b) to enable students to acquire knowledge of the principles of social and behavioural science research design and analysis;
- (c) to enable students to extend skills in formulating research problems, gathering and analysing data, interpreting and communicating research findings;
- (d) to enable students to acquire advanced knowledge in selected topic areas within psychology and applied psychology, building upon and extending basic undergraduate preparation;
- (e) to provide students with an understanding of the nature of psychology as a profession, the ethical, moral, legal and social responsibilities of the psychologist, and the role of the Australian Psychological Society;
It will be expected that all students will have basic subjects. The course offers a 'fixed menu' of eight subjects. These subjects offered are as follows: Hours

Students without this competence will be offered a preliminary short course (fee charging), in order to acquire the requisite skills. In order to be accepted into the course, an applicant must:

1. (a) be qualified for the award of a degree at an Australian university; and
   (b) have completed a three-year major sequence of studies in psychology in a course, or courses, approved by the Australian Psychological Society; or
2. have equivalent overseas qualifications.

In those cases where an applicant meets the requirement of 1(a) above, but does not meet the requirement 1(b), he or she may apply to complete all or part of the undergraduate psychology program at Swinburne University of Technology in order to become eligible to make application for entry to the graduate diploma.

**Course structure**

The course offers a 'fixed menu' of eight subjects. These subjects vary in the amount of time which they demand from students and also in their academic requirements. The course ensures that all students develop basic competencies in research design and analysis, and an understanding of the ethical, moral, legal and social responsibilities of psychologists engaged in social and applied research and professional practice. Students are also expected to acquire advanced knowledge in several areas of applied psychology.

It will be expected that all students will have basic competence in computer and keyboard skills including familiarity with SPSS-PC+.

Students without this competence will be offered a preliminary short course (fee charging), in order to acquire the requisite skills.

There is scope for students to exercise their preferences for particular topics in choosing amongst options within subjects.

The subjects offered are as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY400  Applied Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AY401  Research Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AY403  Quantitative Methods</td>
<td>3</td>
</tr>
<tr>
<td>AY411  Counselling in the Human Services</td>
<td>3</td>
</tr>
<tr>
<td>AY413  Research Project and Report</td>
<td>variable</td>
</tr>
<tr>
<td>AY420  Assessing Persons and the Environment</td>
<td>2</td>
</tr>
<tr>
<td>AY422  Ethics and Professional Issues</td>
<td>2</td>
</tr>
<tr>
<td>AY426  Special Applications (Placement)</td>
<td>variable</td>
</tr>
</tbody>
</table>

**Full-time**

The course can be completed in one year of full-time study extending across two semesters. In the first semester students will be involved in twelve hours of class contact time per week. In the second semester students will be involved in five hours of weekly class time and will also be consulting regularly with an academic supervisor about data analysis for the research project and the writing of the report. Typically, time will also be spent undertaking a work placement during the second semester.

**Part-time**

The course can also be completed in two years of part-time study extending over four semesters. Part-time students usually have weekly class contact hours as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

Students will also be involved in weekly consultations with an academic supervisor about data analysis for the research project and the writing of the report. Typically, time will also be spent undertaking a work placement during the final semester.

**Course structure**

The course consists of four compulsory semester subjects. The subjects are as follows:

- AY400  Principles of Equal Opportunity
- AY401  Data Usage and Evaluation
- AY402  Equal Opportunity and the Workplace
- AY403  Equal Opportunity Implementation
Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on an examination of Japanese current affairs. It is designed to enable students to develop their language skills through reading recent Japanese newspaper articles and listening to media broadcasts and to extend their knowledge of contemporary Japan. Specific training is focused on reading, aural comprehension and speaking.

The course is planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language to a stage where they are competent enough to deal with a wide variety of topics in the written and spoken language.

Development of expertise in grammar is essential, particularly in the understanding of long and complex sentence structures, the acquisition of a wider vocabulary and in the inclusion of a large number of characters. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in precis writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course.

Language development is focused on four major areas of Japanese studies: social, cultural, business and political. Students consider:

(a) general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and

(b) the validity of assertions and generalisations which are made by Japanese, as well as foreign writers.

Entrance requirements

Applicants must have a degree with a major in Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate units of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.

Course structure

The course may be completed part-time in the evening over two years. It comprises eight semester subjects in all and each subject involves four hours of class meetings per week. Usually students enrol for two subjects concurrently in each of the four semesters but may, in special circumstances, enrol for only one subject per semester.

Subjects on Japanese society and culture, and on business and politics are offered in alternate years. Reading materials are available from the course coordinators. In all subjects, students are required to complete one research project and two tests per semester.

The subjects offered at present are:

A1400 Japanese Society A
A1401 Japanese Society B
A1402 Japanese Culture A
A1403 Japanese Culture B
A1404 Japanese Business and Industry A
A1405 Japanese Business and Industry B
A1406 Japanese Politics A
A1407 Japanese Politics B

Preliminary reading


Graduate Diploma in Japanese for Professionals

The Graduate Diploma in Japanese for Professionals is an intensive language course designed for graduates with no previous studies in Japanese. It provides vocational language skills and basic knowledge of the cultural, social, political and economic aspects of contemporary Japan.

The course is planned so that graduates in Business, Law, Medicine, Engineering, etc., who are working, or planning to undertake employment, in an area requiring Japanese language skills and knowledge of Japan, can acquire the main principles of the written and spoken language as well as vocabulary and expressions pertinent to their professional needs.

Entrance requirements

Applicants must have a degree or equivalent, from a recognised university, college or institute.

Course structure

The course entails two years of part-time evening study. The language component is six hours per week over four semesters.

Year 1

The language component in first year includes basic grammar, situational dialogues, aural comprehension and reading/writing sections which provide students with the basic knowledge of the mechanics of the language.

Semester 1

AJ420 Graduate Diploma in Japanese for Professionals 1A
AJ421 Graduate Diploma in Japanese for Professionals 1B

Year 2

The language component at the second year level is divided into a "core" segment of advanced grammar and a segment in which language pertinent to the students' professional needs is studied through reading and conversation.

Semester 1

AJ422 Graduate Diploma in Japanese for Professionals 2A
AJ423 Graduate Diploma in Japanese for Professionals 2B

Supporting components

Equivalent to two hours per week over four semesters.

The four supporting components are culture, society, communication and economy.

These components take the form of five three hour seminars per semester, at times to be arranged.

References


Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on an examination of Japanese current affairs. It is designed to enable students to develop their language skills through reading recent Japanese newspaper articles and listening to media broadcasts and to extend their knowledge of contemporary Japan. Specific training is focused on reading, aural comprehension and speaking.

The course is planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language to a stage where they are competent enough to deal with a wide variety of topics in the written and spoken language.

Development of expertise in grammar is essential, particularly in the understanding of long and complex sentence structures, the acquisition of a wider vocabulary and in the inclusion of a large number of characters. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in precis writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course.

Language development is focused on four major areas of Japanese studies: social, cultural, business and political. Students consider:

(a) general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and

(b) the validity of assertions and generalisations which are made by Japanese, as well as foreign writers.

Entrance requirements

Applicants must have a degree with a major in Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate units of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.

Course structure

The course may be completed part-time in the evening over two years. It comprises eight semester subjects in all and each subject involves four hours of class meetings per week. Usually students enrol for two subjects concurrently in each of the four semesters but may, in special circumstances, enrol for only one subject per semester.

Subjects on Japanese society and culture, and on business and politics are offered in alternate years. Reading materials are available from the course coordinators. In all subjects, students are required to complete one research project and two tests per semester.

The subjects offered at present are:

A1400 Japanese Society A
A1401 Japanese Society B
A1402 Japanese Culture A
A1403 Japanese Culture B
A1404 Japanese Business and Industry A
A1405 Japanese Business and Industry B
A1406 Japanese Politics A
A1407 Japanese Politics B

Preliminary reading


References


Graduate Diploma in Japanese for Professionals

The Graduate Diploma in Japanese for Professionals is an intensive language course designed for graduates with no previous studies in Japanese. It provides vocational language skills and basic knowledge of the cultural, social, political and economic aspects of contemporary Japan.

The course is planned so that graduates in Business, Law, Medicine, Engineering, etc., who are working, or planning to undertake employment, in an area requiring Japanese language skills and knowledge of Japan, can acquire the main principles of the written and spoken language as well as vocabulary and expressions pertinent to their professional needs.

Entrance requirements

Applicants must have a degree or equivalent, from a recognised university, college or institute.

Course structure

The course entails two years of part-time evening study. The language component is six hours per week over four semesters.

Year 1

The language component in first year includes basic grammar, situational dialogues, aural comprehension and reading/writing sections which provide students with the basic knowledge of the mechanics of the language.

Semester 1

AJ420 Graduate Diploma in Japanese for Professionals 1A
AJ421 Graduate Diploma in Japanese for Professionals 1B

Year 2

The language component at the second year level is divided into a "core" segment of advanced grammar and a segment in which language pertinent to the students' professional needs is studied through reading and conversation.

Semester 1

AJ422 Graduate Diploma in Japanese for Professionals 2A
AJ423 Graduate Diploma in Japanese for Professionals 2B

Supporting components

Equivalent to two hours per week over four semesters.

The four supporting components are culture, society, communication and economy.

These components take the form of five three hour seminars per semester, at times to be arranged.

References

Graduate Diploma in Korean

The Graduate Diploma in Korean is an intensive language course based on an examination of Korean current affairs. It is designed to enable students to develop their language skills through reading recent Korean newspaper articles and listening to media broadcasts, and to extend their knowledge of contemporary Korea. Specific training is focused on reading, aural comprehension and speaking.

The course is planned so that students who have completed a three-year undergraduate program in Korean can further their knowledge of the Korean language to a stage where they are competent enough to deal with a wide variety of topics in the written and spoken language. Training in the various styles and speech levels which characterise modern spoken Korean is also a part of the course.

Language development is focused on four major areas of Korean studies: social, cultural, business and political.

Students consider:
(a) general problems and trends as they are analysed by Korean writers within the framework of the society as a whole; and
(b) the validity of assertions and generalisations which are made by Korean, as well as foreign writers.

Entrance requirements

Applicants must have a degree with a major in Korean language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate units of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.

Course structure

The course may be completed part-time in the evening over two years. It comprises eight semester subjects in all and each subject involves four hours of class meetings per week. Usually students enrol for two subjects concurrently in each of the four semesters but may, in special circumstances, enrol for only one subject per semester.

Subjects on Korean society and culture, and on business and politics are offered in alternate years.

The subjects offered are:
AK400 Korean Society A
AK401 Korean Society B
AK402 Korean Culture A
AK403 Korean Culture B
AK404 Korean Business and Industry A
AK405 Korean Business and Industry B
AK406 Korean Politics A
AK407 Korean Politics B

Graduate Diploma in Urban Research & Policy

This course provides students with the practical and conceptual skills necessary to work more effectively or secure employment in the fields of urban and social planning, urban administration, community development and research. More specifically the course is designed to provide knowledge of and experience in:
(a) the analysis of Australian urban development and the social and economic problems that derive from this development;
(b) the formation and characteristics of national, state, and metropolitan policies affecting the urban environment;
(c) the use of techniques and skills relevant to urban research and planning, policy formulation and evaluation.

Entrance requirements

Applicants must hold a degree or diploma from an approved tertiary institution, including major studies in at least one of sociology, politics, economics, geography, planning or contemporary history. Students with majors in discipline other than those listed may also be considered.

Course structure

The course entails one year of full-time study or two years' part-time study, involving six semester subjects and a research report. Each subject usually involves three hours of class meetings per week for one semester.

The following subjects are offered:
AS400 Urban Social Theory
AS402 Urban Policy
AS403 Research Report
AS404 Advanced Urban Research
Each student is expected to complete a research report relating to either policy issues or some aspects of urban planning or community development. Where possible, research is developed in cooperation with government departments, consultancy firms, community groups and research institutes.

**NO89 Graduate Diploma in Writing**

This course will be offered in 1994, subject to approval and accreditation.

The Graduate Diploma in Writing is designed to introduce students to the range of skills required of a professional writer.

The course is designed for those who intend to work (or are already working) in fields which require a high competence in written communication, e.g., writers in commerce, industry and community groups, or free-lance writers. Specifically, the course is designed to provide both a theoretical base and a range of skills applicable to a wide range of writing activities; to provide knowledge of and experience in the analysis of writing; to provide experience in presentation and marketing of manuscripts; to provide students with the practical and theoretical ability to undertake a substantial piece of independent writing.

**Entrance requirements**

Applicants should hold a degree from a recognised tertiary institution, or a qualification approved as equivalent, or equivalent experience.

**Course structure**

The course entails two semesters of full-time study or four semesters part-time. The graduate diploma consists of six subjects: two core subjects (AL400 and AL401) and four elective subjects. The two core subjects involve two hours per fortnight over two semesters. Each elective subject involves three hours of course work per week per semester.

**Core subjects:**
AL400  Reading and Writing Seminar
AL401  Writing Project

**Elective subjects:**
AL402  Writing, Theory, Praxis
AL403  Narrative Writing
AM404  Writing for the Media
AL405  From Book to Film: Textuality and Discourse
AM406  Community Press
AL407  Open Subject

**NO90 Master of Arts (by research)**

The degree of Master (by research and thesis) may be undertaken within the Faculty. Applications for masters candidature may be made by persons whose first degree or diploma has been completed to a sufficiently meritorious standard or whose background and experience is considered suitable. In the first instance, enquiries should be directed to the head or chair of the appropriate discipline.

The course has been granted provisional accreditation as a fifth and sixth year course in psychology by the Course Development and Accreditation Committee of the Australian Psychological Society.

**Course objectives**

Graduates of the course will be able to:
(a) assess the current level of psychosocial functioning of individuals, groups, couples and families and formulate appropriate helping interventions;
(b) provide counselling help to individuals, groups, couples and families experiencing difficulties connected with relationships, education, careers, work, marriage, parenting, crises, and life-transitions;
(c) evaluate and monitor the quality of helping services provided by a counselling services unit;
(d) provide consulting help to individuals, organisations and community groups in relation to psychosocial development and adaptation.

**Entrance requirements**

There is an intake of twenty students into the course every even numbered year. In the event of course vacancies occurring, it may be possible for individual students to be admitted to the program before a scheduled intake.

Applicants with good results in their fourth year studies and/or relevant human services work experience will be interviewed by a selection panel and an order-of-merit for entry will be prepared taking into account (a) academic preparation, (b) previous work and training experience, (c) academic and professional referees’ reports.

In order to be accepted into the course, an applicant must (a) be qualified for the award of a degree from an Australian university, and (b) have completed a four-year sequence of studies in psychology in a course, or courses, approved by the Australian Psychological Society’s Course Development and Accreditation Committee (as published in the Society’s Bulletin) OR hold overseas qualifications recognised as equivalent for the purpose of Associate Membership by the Australian Psychological Society’s Membership Committee.

**Satisfactory progress**

Students’ progress will be monitored by the Department’s Graduate Studies Committee. A student who is given an N or NA grade for a unit twice may not be permitted to re-enrol in the course. Students will be required to complete the course in not more than six years.

**Course structure**

Counselling psychology is very diverse, with many particular applications. The course has been organised in such a way as to (a) teach generic skills and areas of knowledge which apply across the various areas of counselling psychology practice, and (b) examine selected areas of practice which exemplify the delivery of counselling-related services to persons with particular needs. There are three course components: coursework (50%); supervised practical work (25%); an empirical research project (25%).

The overall structure of the course will be as follows:

**Year 1**

<table>
<thead>
<tr>
<th>Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY510</td>
</tr>
<tr>
<td>AY511</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY512</td>
</tr>
<tr>
<td>AY513</td>
</tr>
</tbody>
</table>
Year 2
Semester 1
AY514 Development and Adaptation
AY515 Psychological Assessment
Semester 2
AY516 Counselling Applications
AY517 Supervised Practicum Internship A
Year 3
Semester 1
AY610 Professional, Ethical and Legal Issues
AY517 Supervised Practicum Internship A
Semester 2
AY611 Counselling Psychology B: Psychology of the Family, Educational Counselling
AY612 Supervised Practicum Internship B
Year 4
Semester 1
AY613 Counselling Psychology A: Psychology of Work, Health Psychology
AY612 Supervised Practicum Internship B
Semester 2
AY614 Aspects of Professional Practice
AY615 Research Project and Report

Three of the coursework subjects comprise advanced study in areas central to the practice of counselling psychology; Development and Adaptation, Psycholological Assessment, Counselling Theory and Skills, Counselling Applications, Group Counselling Skills.

Five of the coursework subjects comprise professional skill development training:
- Human Services Research and Evaluation
- Psychological Assessment
- Counselling Theory and Skills
- Counselling Applications
- Group Counselling Skills

There is a coursework unit examining Professional and Ethical Issues in Counselling Psychology Practice.

NO92 Master of Arts in Japanese

The course incorporates advanced language coursework and research components. The research topic can pertain to any Japan related area provided that a suitably qualified supervisor is available. It is offered as a full-time or a part-time program.

Entrance requirements

(a) Bachelor of Arts degree with a major in Japanese with credit or above results in the third year Japanese language subjects and overall high performance level in other disciplines.
(b) Honours (Japanese) with H2A or higher results.
(c) Graduate Diploma in Japanese with credit or above results in all subjects.

Course structure
Bachelor of Arts graduates
Part I:
(a) Six hours per week of advanced language coursework over two semesters (four semester subjects of the Graduate Diploma in Japanese program).
Alternatively a corresponding period of language study might be undertaken at an approved tertiary institution in Japan.
(b) The 'Philosophy of Inquiry' component of the honours cultural studies seminar.

(c) Thesis: 15,000-20,000 words.

The above program is the same as the Japanese honours year program.

Part II:
(a) Six hours per week of advanced language coursework over two semesters. (The remaining four subjects of the Graduate Diploma in Japanese.)
(b) Minimum of one linguistics subject relevant to the topic of the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(c) Minor thesis to be written in English with a substantial summary in Japanese.

Honours/Graduate Diploma in Japanese graduates

(a) Six hours per week advanced language study over two semesters. Four semester subjects (not taken in the honours year) of the existing Graduate Diploma in Japanese.
Alternatively a corresponding period of language study might be undertaken at an approved tertiary institution in Japan.
(b) Minimum of one linguistics subject relevant to the topic of the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(c) Minor thesis to be written in English with a substantial summary in Japanese.

Graduate Diploma in Japanese

(a) At least one linguistics subject relevant to the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(b) The 'Philosophy of Inquiry' component of the honours cultural studies seminar. (Only students with no previous background in research methodology.)
(c) Further language study to an extent agreed by the supervisor and the Faculty.
(d) Minor thesis to be written in English with a substantial summary in Japanese.

Duration of the course

Full-time:
Bachelor of Arts entry — two years.
Honours/Graduate Diploma in Japanese entry — one year.
Part-time:
Bachelor of Arts entry — no longer than five years.
Honours/Graduate Diploma in Japanese entry — no longer than three years.

Assessment

Assessment is continuous and is based on satisfactory completion of both the language coursework and research components.
Master of Arts in Korean

The course incorporates advanced language coursework and research components. The research topic can pertain to any Korea related area provided that a suitably qualified supervisor is available. It is offered as a full-time or a part-time program.

Entrance requirements
(a) Bachelor of Arts degree with a major in Korean with credit or above results in the third year Korean language subjects and overall high performance level in other disciplines.
(b) Honours (Korean) with H2A or higher results.
(c) Graduate Diploma in Korean with credit or above results in all subjects.

Course structure
Bachelor of Arts graduates
Part I:
(a) Six hours per week of advanced languages coursework over two semesters. Four semester subjects of the existing Graduate Diploma in Korean. Alternatively a corresponding period of language study might be undertaken at an approved tertiary institution in Korea.
(b) The 'Philosophy of Inquiry' component of the honours cultural studies seminar.
(c) Thesis: 15,000-20,000 words.

The above program is the same as the Korean honours year program.

Part II:
(a) Six hours per week of advanced language coursework over two semesters. (The remaining four subjects of the Graduate Diploma in Korean.)
(b) Minimum one linguistics subject relevant to the topic of the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(c) Minor thesis to be written in English with a substantial summary in Korean.

Thesis length: 15,000-20,000 words.

Bachelor of Arts (Honours) (Korean) graduates
(a) Six hours per week advanced language study over two semesters. Four semester subjects (not taken in the honour; year) of existing Graduate Diploma in Korean. Alternatively a corresponding period of language study might be undertaken at an approved tertiary institution in Korea.
(b) Minimum one linguistics subject relevant to the topic of the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(c) Minor thesis to be written in English with a substantial summary in Korean.

Thesis length: 15,000-20,000 words.

Graduate Diploma in Korean graduates
(a) At least one linguistics subject relevant to the thesis to be taken on a complementary study basis at another tertiary institution. (For students undertaking research in linguistic aspects of the language.)
(b) The 'Philosophy of Inquiry' component of the honours cultural studies seminar. (Only students with no previous background in research methodology.)
(c) Further language study to an extent agreed by the supervisor and the Faculty.
(d) Minor thesis to be written in English with a substantial summary in Korean.

Thesis length: 15,000-20,000 words.

Students undertaking the program on a part-time basis may choose to complete the language component (where applicable) prior to commencing research or, alternatively, enrol in one language subject and one research component per semester.

Duration of course
Full-time:
Bachelor of Arts entry — two years.
Honours/Graduate Diploma in Korean entry — one year.

Part-time:
Bachelor of Arts entry — no longer than five years.
Honours/Graduate Diploma in Korean entry — no longer than three years.

Assessment
Assessment is continuous and is based on satisfactory completion of both the language coursework and research components.

Master of Arts in Urban Research and Policy

This course is offered as a three semester full-time program or six semester part-time program. The course content is the same as the Graduate Diploma in Urban Research and Policy however, masters students are also required to undertake a 25,000 word thesis.

Entrance requirements
Applications for the Masters in Urban Research and Policy may be made by persons with an honours degree or equivalent fourth year course, for example, a Graduate Diploma. In certain circumstances relevant industrial experience may be considered instead of a fourth year of study.

Master of Communications

This course will be offered in semester two 1994, subject to approval and accreditation.

The course will offer graduates, senior industry personnel, and international students an advanced course in the field of media and telecommunications. It will provide them with specialised knowledge at the cutting edge of communications culture, improve their research capabilities, and develop their range of applied communications skills.

The course aims to provide:
(a) both theoretical and conceptual approaches to fields of debate in communication studies and the enhancement of practical skills
(b) exploration of subjects, research and production approaches highly relevant to contemporary society
(c) flexibility in terms of choice across streams of media and telecommunications policy analysis, cultural theory and textual analysis, production, writing and journalism, new communications technology, and marketing
(d) a breadth of expertise which students can utilise in applied field work, for themselves, or with an employer
(e) good opportunities for close liaison with industry personnel, including course presentations by industry specialists, and industry based research.

Entrance requirements
Applicants should hold a fourth year, or equivalent degree, from a tertiary institution, or an approved equivalent qualification, or equivalent experience.
Course structure

The program is a one year full-time course, or a four semester part-time course, plus a minor thesis.

The masters degree consists of four subjects, including two compulsory core subjects, plus a minor thesis. Each subject involves three hours of course work per semester. A minor thesis, of 20,000 words or equivalent, is to be undertaken concurrently. It is possible to select electives from NO89, the Graduate Diploma in Writing.

The subjects are as follows:

**Core subject**
AM500 Globalisation: Media and Telecommunications

**And one of**
AM501 Communication Environments
CR
AM507 Information Society 2000 (modified AM307)
CR
AM502 Asian Communications

**Core subject**
AM503 Interrogating Texts: Cultural Dreaming

**And one of**
AM504 Professional Production
CR
AM505 Workplace Practice
CR
AM402 Writing, Theory, Praxis (Graduate Diploma in Writing)
CR
AM404 Writing for the Media (Graduate Diploma in Writing)

**Also**
AM506 Thesis (1-2 semesters) [Compulsory]

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NO02 Professional Doctorate in Psychology

This is a three year full-time program which prepares graduates to a high level of proficiency in the practice of counselling psychology. Graduates from the course complete all the course work subjects and practicum experience placements which make up the Master of Arts in Counselling Psychology program. In addition, they complete a substantial research study and submit this in the form of a major thesis. Students are also required to attend and participate in the Department's regular program of colloquia.

There will normally be an intake of up to five new entrants each year. The Department may vary the frequency of intake and the number of new entrants depending on the availability of staff to provide suitable research supervision. In order to be admitted to the course, an applicant must hold a first or upper second class honours degree in psychology from a recognised Australian university (or hold qualifications deemed by the University's Higher Degree Committee to be equivalent) and be eligible for Associate Membership of the Australian Psychological Society. Intending applicants should consult with the Coordinator of the program prior to lodging an application.

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NO01 Doctor of Philosophy

The degree of Doctor of Philosophy may be undertaken by suitably qualified individuals in areas of study compatible with the interests and expertise of staff.
Subject details

AA102 Understanding Italy
No. of hours per week: three hours, evening only
Prerequisite: nil
Assessment: by essay and seminar presentation

Subject aims and description
The aim of the course is to explore some of those influences which have shaped the development of Italy into a modern industrial nation.

The course is designed
(a) To give students an appreciation of the Italian way of life and understanding of the people of Italy today.
(b) To develop in the students an understanding of contemporary Italy by introducing them to recent historical, existing and changing Italian cultural values, social, political and economic issues.

AA106 Advanced Italian 1A
No. of hours per week: six hours
Prerequisite: VCE Italian or approved equivalent
Assessment: partly continuous, partly by examination

Subject aims and description
The program has been planned in order to develop students' conversation skills and proficiency in writing standard Italian. Through a detailed critical analysis of contemporary literature, students will improve their competence in grammar, vocabulary and idioms.

Textbooks

Reference
McCormick, C.A. Basic Italian Grammar. 2nd ed. Melbourne: Cheshire, 1976

AA107 Advanced Italian 1B
Equivalent value two semester subjects
No. of hours per week: six hours
Prerequisite: AA106 or approved equivalent
Assessment: partly continuous, partly by examination

Subject aims and description
The program has been planned in order to develop students' conversation skills and proficiency in writing standard Italian. Through a detailed critical analysis of contemporary literature, students will improve their competence in grammar, vocabulary and idioms.

The aim of the course is to consolidate and extend the work begun in semester one.

AA109 Italian 1X
No. of hours per week: six hours
Prerequisites: nil
Assessment: partly continuous, partly by examination

Subject aims and description
This is a practical introduction to the language; a basic grammatical and conversational ability will be achieved. The course also includes a general introduction to the study of the Italian way of life.

Textbooks

AA110 Italian 1Y
Equivalent value two semester subjects
No. of hours per week: six hours
Prerequisite: AA109 or approved equivalent
Assessment: partly continuous, partly by examination

Subject aims and description
This is a practical introduction to the language; a basic grammatical and conversational ability will be achieved. The course also includes a general introduction to the study of the Italian way of life.

The aim of the course is to extend the work begun in semester one.

AA205 The European Community
No. of hours per week: three hours, evening only
Prerequisite: any stage one BA subject
Assessment: continuous

Subject aims and description
The course will identify the key factors which determined European politics from 1945 and will analyse the social, political and economic changes in post-war Europe. It will discuss the significance of the completion of the European Common Market 1993 with a particular emphasis on the effects on Italy as a Member of the European Community.

References
Lane, P. Europe Since 1945. London: Thames Hudson, 1985

AA206 Advanced Italian 2A
No. of hours per week: six hours
Prerequisite: AA107 or approved equivalent
Assessment: partly continuous, partly by examination

Subject aims and description
The course aims to consolidate students' advanced Italian language knowledge through advanced grammatical exercises and the study of appropriate literary works. The subject will also develop in students an understanding of contemporary Italy through the study of Italian history which covers the period from the rise of Fascism to present day Italy.

Textbooks
A novel to be advised.
**AA207 Advanced Italian 2B**
No. of hours per week: six hours
Prerequisite: AA206 or approved equivalent
Assessment: partly continuous, partly by examination

**Subject aims and description**
The course aims to consolidate students’ advanced Italian language knowledge through advanced grammatical exercises and the study of appropriate literary works. The subject will also develop students’ understanding of contemporary Italy through the study of Italian history which covers the period from the rise of Fascism to present day Italy.

The aim of the course is to consolidate and extend the work begun in semester one.

**AA208 20th Century European Literature and Thought**
No. of hours per week: three hours
Prerequisites: any two stage two BA subjects
Assessment: continuous

**Subject aims and description**
This is an interdisciplinary subject which examines writers who have shaped the European consciousness. It provides students with the opportunity to study influential works in 20th century European literature and through this to gain an understanding of some of the main intellectual currents in western culture.

**Preliminary reading**

**AA209 Italian 2X**
No. of hours per week: six hours
Prerequisite: AA110 or approved equivalent
Assessment: partly continuous, partly by examination

**Subject aims and description**
The main objective of this subject is to extend the knowledge of the Italian language thus gaining linguistic competence that will enable students to deal with a wide range of topics in the written and spoken language. Through a detailed critical analysis of contemporary literature, students will be able to develop further their competence in grammar, vocabulary and idioms.

**Textbooks**

**References**
McCormick, C.A. Basic Italian Grammar. 2nd ed, Melbourne: Longman Cheshire, 1974

**AA210 Italian 2Y**
No. of hours per week: six hours
Prerequisite: AA209 or approved equivalent
Assessment: partly continuous, partly by examination

**Subject aims and description**
The main objective of this subject is to extend the knowledge of the Italian language thus gaining linguistic competence that will enable students to deal with a wide range of topics in the written and spoken language. Through a detailed critical analysis of contemporary literature, students will be able to develop further their competence in grammar, vocabulary and idioms.

The aim of the course is to consolidate and extend the work begun in semester one.

**AA306 Advanced Italian 3A**
No. of hours per week: three hours
Prerequisite: AA207 or approved equivalent
Assessment: continuous

**Subject aims and description**
The course aims to maintain and consolidate students’ high level of proficiency in Italian through the study of narrative works, in conjunction with Italian films related to the novels studied.

**References**
Novels to be advised.

**AA307 Advanced Italian 3B**
No. of hours per week: three hours
Prerequisite: AA306 or approved equivalent
Assessment: continuous

**Subject aims and description**
The course is intended to give students the opportunity to choose an area of study, or texts, not previously studied. Students will discuss their proposed topics with the subject convenor and will be supervised on an individual basis.

**Textbooks**
Students will be advised individually, according to their chosen area of study.

**AA308 Italian Business Practice**
No. of hours per week: three hours
Prerequisites: stage one Faculty of Business units or equivalent, and Stage two Italian or equivalent
Assessment: continuous

**Subject aims and description**
This subject is designed to make students familiar with international trade and the contemporary Italian business environment, and to extend appropriate vocabulary and language skills. The aim is to give students the essential skills and confidence to do business with Italian entities. Topics will include elements of international management and marketing, Italian political, financial, cultural and economic structure; and environment, export/import practices, and linuistics of international trade. A student seminar and case discussion approach will be taken. Teaching and student participation will be both in English and Italian.

**References**
There is no single prescribed text for this subject. Contemporary business journals and newspapers together with extracts and teaching cases from selected texts will be used. The following dictionary/language guide will prove a useful reference:
Rakas, Frank G. Talking Business in Italian. New York: Barron’s, 1987

**AA309 Italian 3X**
No. of hours per week: six hours
Prerequisites: AA210 or approved equivalent
Assessment: partly continuous, partly by examination

**Subject aims and description**
The main objectives of Italian 3X are to consolidate the students’ language skills and to develop these further...
through a study of appropriate literature and allied grammar; to develop their oral skills through conversation and discussion in Italian; to develop in the student an understanding of contemporary Italy through the study of Italian history which covers the period from the rise of Fascism to present day Italy, which is complemented by contemporary documents on present day Italy and appropriate films and other media.

**Textbooks**
A novel to be advised

**Subject aims and description**
The main objectives of Italian 3Y are to consolidate the students' language skills; and to develop these further through a study of appropriate literature and allied grammar; to develop their oral skills through conversation and discussion in Italian; to develop in the student an understanding of contemporary Italy through the study of Italian history which covers the period from the rise of Fascism to present day Italy, which is complemented by contemporary documents on present day Italy and appropriate films and other media.

The aim of the course is to consolidate students' advanced Italian language proficiency and extend the work begun in semester 1.

**Subject aims and description**
The European Community 2 Study tour of approximately three weeks to at least two EC countries
Prerequisites: AA102, AA106, AA107
Assessment: continuous
This subject will be offered in 1994 if the pilot study tour of 1993 has been deemed successful.

**Subject aims and descriptions**
This subject is highly recommended for students enrolled for the Double Degree BBus/BAA (Italian). It will provide students with an opportunity to examine the application of EC regulation, both from an end-user perspective and from the perspective of third countries such as Australia.

**Subject aims and description**
The subject is designed to make students aware of some of the main areas of Italy's achievements and to develop in students an understanding of the important economic, commercial, political, social and cultural aspects of Italy's changing reality.

Note: In order to complete a major in Italian, AA309 and AA310 (Beginner's stream) or AA306 and AA307 (post-VCE stream) are normally completed prior to, or concurrently with AA373.

**Subject aims and description**
Introduces students to some of the key terms involved in argumentative structures and seeks to develop students' skills in critical analysis and clear thinking through an examination of a range of contemporary Australian social issues.

**AD101 Australian Government**
No. of hours per week: three hours

**Subject aims and description**
Examines the ways in which government is structured in Australia and how the different levels of government function in our society. Particular reference is given to the relationship that exists between the political and the legal systems and their related functions.

**AD102 & 103 Australian Society, the Economy and the Environment — 1 & 2**
No. of hours per week: three hours for two semesters

**Subject aims and description**
This subject explores the nature of communication theory and the ways in which people can develop and apply their abilities in the key areas associated with written, spoken and graphic formats and styles.

**AD105 Individuals, Groups and Organisations**
No. of hours per week: three hours

**Subject aims and description**
Explores the relationships between behaviour, personal identity, social roles, interpersonal relationships and social contexts. Considers the social and psychological dimensions of organisations including employment contexts.

**AD106 & 107 Using Information Technology — 1 & 2**
No. of hours per week: three hours for two semesters

**Subject aims and description**
Familiarises students with the broad impact of information technology in the workplace. Instructs and assists students to use personal computers and to understand the basic applications of a range of computer software. In the first semester, students will be introduced to operating systems and word processing and will develop basic competence in file management and word processing. In the second semester, word processing skills will be further developed and other kinds of applications (e.g., spreadsheets) will be introduced.
AD108 Issues in Multicultural Australia
No. of hours per week: three hours

Subject aims and description
Explores the social impact of Australia's ethnically diverse population and explores the effects of cultural and linguistic differences on individuals' life chances. The subject will also cover the practical issues of dealing with members of the public and/or the workplace who may come from different cultural backgrounds.

AD109 Languages Other than English
AD110
No. of hours per week: six hours for two semesters

Subject aims and description
Students choosing to study a language other than English as an elective must undertake two semesters of study. The course of study assumes no prior knowledge of the language chosen. Both written and spoken language skills will be developed. The cultural dimensions of the language and its social context will be studied, especially in relation to its relevance in the workplace.

AD111 Technology and Society
No. of hours per week: three hours

Subject aims and description
Investigates the key concept of change in society with particular reference to explaining how and in what ways societies generate new technologies and adapt to their impact. Case study examples will be used to focus the study of technology.

AD112 Understanding the Mass Media
No. of hours per week: three hours

Subject aims and description
Examines the roles and functions of the major forms of mass media in Australian society. Particular emphasis is given to such factors as ownership and control of the media, mechanisms for media regulation and debates about the influence of mass media on individuals and social patterns.

AD200 Behaviour in Organisations
No. of hours per week: three hours

Subject aims and description
Examines the theories of organisational behaviour. Considers the ways in which groups and individuals interact with each other and impacts of organisational structures on the functioning of organisations. Particular emphasis is given to the analysis of organisational culture and how such phenomena affect behaviour in the workplace.

AD201 Culture and Ideas
No. of hours per week: three hours

Subject aims and description
Examines theories of culture and the notions of cultural transmission, continuity and discontinuity and change in society. Includes case studies of cultural contexts, meaning systems, representations in film and text and the social sources and impact of cultural symbolism. The role of ideas and systems of meaning in Australian society is highlighted.

AD202 Data Usage and Interpretation
No. of hours per week: three hours

Subject aims and description
This subject helps the student understand a range of forms of data and ways of organising both qualitative and quantitative data. It helps students comprehend basic methods of analysis of these data as well as how to interpret data for particular purposes in a variety of employment contexts.

AD203 Economic Decision-making in the Enterprise
No. of hours per week: three hours

Subject aims and description
Develops an understanding of the role of the enterprise in a modified market economy. The emphasis is on concepts relevant to microeconomics but the importance of the macroeconomic context in which decisions are made will be stressed. The student should develop skills of analysis and synthesis based on an understanding of economic concepts. The aim will be to ensure that there is an appreciation of the complexity and the interrelationship between economic factors and their importance in making economic decisions within business organisations.

AD204 Equity and Opportunity in Australian Society
No. of hours per week: three hours

Subject aims and description
Examines the ideas which underpin concepts of equity and opportunity and explores how these ideas and concepts are made evident in Australian society, in organisational structures and in related contexts. Evaluation of these concepts and the critical analysis of their applicability in particular work structures is investigated.

AD205 Health and Illness
No. of hours per week: three hours

Subject aims and description
Examines the area of occupational health and safety both in its social and legislative contexts and in its organisational context. Investigates the impact of illness in the workplace and the broader legal and social issues of health and illness in the society and the workplace, e.g., prevention, rehabilitation, improved work practices, retraining, access to medical care.

AD206 Industrial Relations
No. of hours per week: three hours

Subject aims and description
Investigates the forces for cooperation and conflict as they impact on the industrial relations arena in complex technological societies. Explores the roles and boundaries of government involvement and the legal dimensions of industrial relations as they affect the roles of employers and unions in a changing environment. Case studies of the interaction between these often competing groups are examined.

AD207 Information Systems, Society and Technology
No. of hours per week: three hours

Subject aims and description
Explores the theoretical perspectives which influence understanding about the evolution of information technology and its place in different economic contexts. Investigates the design and use of information systems and develops the skills of needs analysis to arrive at decisions governing the selection and implementation of appropriate technological solutions adapted to the needs of the workplace.
AD208 **Negotiation and Change Management**
No. of hours per week: three hours

**Subject aims and description**
Considers how interpersonal and group communication theory can inform the skills of discussion, presentation and conciliation involved in negotiation. Analyses the dynamics of change and how change occurs within complex societies and organisations. Develops the ability to understand, devise, implement and monitor strategies to change aspects of the way workplaces operate.

AD209 **Report Writing**
No. of hours per week: three hours

**Subject aims and description**
Examines the nature, purposes, styles and formats for report writing. Particular audiences are used to highlight the need to decide what sort of data should be collected, how they should be analysed and how they should be presented in writing according to the judgments about purposes identified by the writer of the report. Setting out and production of reports will also be covered.

AD210 **Research Skills**
No. of hours per week: three hours

**Subject aims and description**
Assist students to develop skills in secondary and primary research. Students will develop the ability to distinguish appropriate from inappropriate research methodologies, to locate sources of published social data, to analyse secondary data and to carry out small-scale independent research projects using both qualitative and quantitative techniques.

AD211 **Writing and Producing for Public Release**
No. of hours per week: three hours

**Subject aims and description**
Instructs students in the appropriate formats and production modes for preparing material to be disseminated through the written and electronic mass media. Prepares students to identify the characteristics of target audiences and to write text appropriate for particular audiences. Training in in-house journalism techniques will also be included.

AD212 & AD213 **Language Other than English**
No. of hours per week: six hours for two semesters

**Subject aims and description**
Students continue with a study of a language commenced in Year 1.

AE400 **Principles of Equal Opportunity**

**Subject aims and description**
This subject explores the development of principles and the basic concepts relating to equal opportunity and discrimination. The role of legislation in achieving equal opportunity outcomes and the existing statutory requirements at state and federal level are examined.

Other issues covered include:
- Basic concepts used to understand equal opportunity such as discrimination, target groups, race, gender, ethnicity, disability, harassment.
- The role of government in international and local contexts
- The legal framework and the operation of laws governing equal opportunity.

AE401 **Data Usage and Evaluation**

**Subject aims and description**
This subject provides participants with training in skills needed to analyse and evaluate staffing profiles for the purposes of equal opportunity administration. In addition to instruction in basic data compilation and presentation, the following topics will be covered.

- Accessing existing data sources, determining new data sources within the organization, organizing a data base, qualitative and quantitative research methods, data analysis, issues of confidentiality and ethics, monitoring techniques and models of evaluation. Training is basic computer analysis methods is included.

AE402 **Equal Opportunity and the Workplace**

**Subject aims and description**
The skills and knowledge gained in this subject will help participants to understand workplace dynamics and to operate as effective equal opportunity administrators. It will also raise issues of workplace organisation as they affect employees in general and target groups in particular. Topics covered include:
- The structure and nature of organisations, labour market segmentation, formal and industrial relations, personnel and administrative practices, conditions of employment, the special needs of target groups and the effects of organisational change on various groups within the organisation.

AE403 **Equal Opportunity Implementation**

**Subject aims and description**
This subject has a strong practical orientation and is designed to assist participants to formulate and implement an affirmative action program. This subject builds on the concepts and skills learned earlier and applies these to equal opportunity practice. Participants may undertake individual implementation projects under the supervision of staff which will be complemented by discussions of the issues involved in implementation programs.

AH100 **Introduction to Philosophy**

**No. of hours per week: three hours**

**Prerequisites:** nil

**Assessment:** continuous and by examination

**Subject aims and description**
An introduction to the problems and methods of philosophy. An examination of the ideas of some of the great philosophers of the past. Some basic principles of handling language and conceptual analysis; the application of such principles to specific problem areas such as: knowledge and perception; truth and falsity; human nature; moral judgements; organisation of society; God and religious belief.

**Preliminary reading**

**Textbooks**
Please consult with lecturer before buying textbooks

**References**
Sheaffer, J.A. Reality, Knowledge and Value. New York: Random House, 1971
AH101  History of Ideas  
No. of hours per week: three hours  
Prerequisites: nil  
Assessment: continuous  

Subject aims and description  
This subject is an introduction to the history of ideas. By using a particular intellectual focus or theme, it seeks to show how our contemporary understanding of ourselves and our relationship to the world has been shaped by important developments in the past.  
Themes which serve as a focus for this course may include one or more of the following: Darwin's theory of evolution; the concept of the self (from Descartes to Freud); God and nature; knowledge and belief.  

Textbooks  
Please consult with lecturer before buying textbooks  

References  

AH102  Theories of the Universe  
No. of hours per week: three hours  
Prerequisites: nil  
Assessment: continuous  

Subject aims and description  
Ideas about the world and our relationship to the universe. Within the general framework of social history the main emphasis is on the interaction of culture, civilisation, social change, and science.  
Major topics include: ancient societies, religion and science, concepts of the universe, theories and hypotheses,  

Preliminary reading  

Textbook  

References  

AH103  Critical Thinking  
No. of hours per week: three hours  
Prerequisites: nil  
Assessment: by examination and class exercises  

Subject aims and description  
The aim of this course is to help students develop critical reasoning skills which they can apply both in the assessment of arguments encountered in academic and everyday contexts and in the construction of strong arguments in support of their own claims. A variety of practical skills is taught. For example, how to: distinguish claims from evidence; assess claims on the basis of the evidence presented; identify fallacies in arguments; organise material in logically coherent patterns; evaluate objections to claims made and to respond to them in a sustained and objective manner. Such skills are basic to the effective completion of academic assignments.  

Textbooks  
Please consult with lecturer before buying textbooks  

References  

AH201  Mind, Language and Thought  
No. of hours per week: three hours  
Prerequisite: one of AH100, AH101, AH102, AH103 or approved equivalent  
Assessment: continuous  

Subject aims and description  
This subject explores theories of the relationship between mind, cognition, language and culture. Themes studied will be chosen from the following list: mind, brain and cognition; language, meaning and truth; language as representation and as metaphor; signs, language and culture.  

Preliminary reading  

Textbooks  
Please consult with your lecturer before buying textbooks  

Reference  

AH203  Nature and Human Nature  
No. of hours per week: three hours  
Prerequisites: AH100, AH101, AH102, AH103 or approved equivalent  
Assessment: continuous  

Subject aims and description  
The purpose of this course is to examine the ways in which biological theories of behaviour and heredity have influenced social thought. The interrelationships between theories of human nature are explored in terms of the birth of the new science of psychology at the end of the nineteenth century. Themes to be explored include: the 'mis-measure of man'; the origins of the nature-nurture controversy; the rise of the concept of culture in social science: the origins of industrial psychology; biology and scientific Utopias; the concept of the savage: behaviour and the perfectibility of man; scientific theories of race and their impact; the image of the black Australian in European anthropology; Sigmund Freud, his life and times.  

Textbooks  

Reference  

AH204  Philosophy of Culture  
No. of hours per week: three hours  
Prerequisite: one of AH100, AH101, AH102, AH103 or approved equivalent  
Assessment: continuous  

Subject aims and description  
This course is designed to provide students with the historical, philosophical and theoretical background to current research in the study of culture, to examine the assumptions underlying the major theoretical developments and major schools of cultural studies and thereby to show the relationships between the different dimensions of culture, to reveal the practical implications of such research, and to consider what are the most promising lines of research for the future. The subject examines Marxist, hermeneuticist, structuralist, post-structuralist and symbolic interactionist approaches to culture, and the conflicts between the proponents of these different approaches.
AH301  
**Rationality**
No. of hours per week: three hours  
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206, or approved equivalents  
Assessment: continuous

**Subject aims and description**
This subject engages the contemporary debate about the meaning and value of rationality. The issues considered include: the problem of the rational justification of beliefs and actions in a way which does justice to our status as situated human agents; the relationship between rationality and scientific inquiry, and between western rationality and the rationality of other cultures; the problem of relativism; and the links between rationality and human well-being.

**Textbook**
Please consult with the lecturer before buying textbooks

**References**
Buchanan, R.A. History and Social Theory. London: Routledge, 1988
Kemp, A. After Virtue. 2nd ed, Notre Dame: University of Notre Dame Press, 1984
Longman. 1981
Maclntyre, A. A Short History of Ethics. London: Routledge
Murnford. L. The Myth of the Machine: Technology and Society
Preliminary reading

**AH306  
Practical Ethics**
No. of hours per week: three hours  
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206, or approved equivalents  
Assessment: continuous

**Subject aims and description**
This subject attempts to develop an understanding of the process of moral decision making, with a view to improving the ability of participants to form ethical judgements and to be tolerant of the judgements of others.

Presently, the two main areas of discussion are the moral value of human beings and environmental ethics. Further areas may be added in future years.

**Textbooks**
Kemp, A. After Virtue. 2nd ed, Notre Dame: University of Notre Dame Press, 1984

**AH307  
Australian Science and Society**
No. of hours per week: three hours  
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206 or approved equivalents  
Assessment: continuous

**Subject aims and description**
This subject will bring perspectives from the history, philosophy and social studies of science to bear on the theme of Australian science and society. Topics covered will range from Aboriginal conceptions of nature to colonial science with its cultural dependence on metropolitan centres, to the triumph of molecular biology and
immunology and the rise of scientific internationalism and cultural independence. The subject will also examine current issues in Australian science and technology, science policy and the public image of science.

References


*AH308 Social Studies of Science
No. of hours per week: three hours
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206 or an approved equivalent
Assessment: continuous

Subject aims and description
This subject will examine the contemporary debate on the social construction of scientific knowledge. The extent to which science reflects the culture in which it is set has been the subject of much recent writing about science. Some authors make the claim that scientific knowledge is autonomous, and the proper objects of sociological inquiry are the various social and institutional relationships which hold within the community of scientists, both in the laboratory and in the wider world. More recently, the claim has been made that social factors contribute in a crucial way to the content of science itself, to the type of knowledge that is produced. These claims will be investigated through case studies on both historical and current issues.

References


*AH311 Environmental Philosophy
No. of hours per week: three hours
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206 or approved equivalents
Assessment: continuous

Subject aims and description
The global destruction of the environment is perhaps the most serious crisis humanity has ever had to confront. This course examines the cultural, social and economic roots of this crisis, with specific reference to Australia, and considers what courses of action are open to us. While ethics and political philosophy are considered, the major focus of the course is on economic theory and policy formation. The assumptions of prevailing economic thought and prevailing forms of policy analysis are critically examined, and then the new approaches to economics and policy formation designed to take into account energetic and ecological processes and to provide the basis for an environmentally sustainable society are investigated.

References

Daly, H. and Cobb. J. for the Common Good: Redirecting the Economy Toward Community, the Environmental, and a Sustainable Future. Boston: Beacon Press, 1989


*AH312 Natural Philosophy and the Sciences
No. of hours per week: three hours
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206, or approved equivalent
Assessment: continuous

Subject aims and description
Science in the twentieth century is inaugurating one of the most radical revolutions in thought in the history of humanity. This subject examines this revolution and its implications. It begins with a critical study of theories of scientific knowledge to reveal the inextricable link between science and natural philosophy — the quest to characterise the nature of physical existence. It is then shown how the 'new physics' and the 'new biology' have abandoned the philosophy of nature on which science has been based for the last three hundred years, creating a new conception of physical existence which is transforming our view of the cosmos, of life, and what it means to be human. It is shown how these transformations are enabling us to understand how we, as both natural and cultural beings, are able to create science and achieve this understanding of the world and ourselves. The subject concludes by looking at science
as a cultural process in which humans are creating and transforming themselves and their relationship to the rest of nature.

References
Chalmers, A. What is This Thing Called Science? 2nd ed. St. Lucia: University of Queensland Press, 1982
* Not available to students who have previously passed

**AH304** Philosophy of Science A.

**AH313** Knowledge, Science and Reality
No. of hours per week: three hours
Prerequisites: two of AH200, AH201, AH202, AH203, AH204, AH205, AH206 or approved equivalents
Assessment: continuous

Subject aims and description
The Instrumentalism/Realism debate. Can we have absolute knowledge of the world? Is there such a thing as 'truth' or is our knowledge always tentative and open to revision? What effects have values, attitudes, perceptions, emotions and belief systems on the scientific enterprise? E.g. biotechnology, IVF. What are the consequences for the sciences and social sciences? Among the authors whose works will be considered are Dewey, Smart, Popper, Kuhn, Ravetz.

Preliminary reading

Textbook
Kannegieser, H. Knowledge and Science. South Melbourne: Macmillan, 1977

References
Kuhn, T. The Structure of Scientific Revolutions. 2nd ed. Chicago: University of Chicago Press, 1970
* Not available to students who have previously passed

**AH305** Philosophy of Science B.

**AJ103** Japanese 1A
No. of hours per week: six hours
Prerequisites: nil
Assessment: continuous

Subject aims and description
This is a subject designed to introduce students to the Japanese language, and training is provided in language patterns and grammar, writing, conversation, listening and comprehension. Films, slides and a variety of taped materials are used extensively throughout the course. As a further aid, taped cassette of each lesson can be purchased. It is highly recommended that students enrolled in this subject also enrol for AJ102, offered in both semesters.

Textbooks

References

**AJ104** Japanese 1B
Equivalent value two semester subjects
No. of hours per week: six hours
Prerequisites: AJ103 or approved equivalent
Assessment: continuous

This subject is a continuation of AJ103.

Textbooks
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 4 and 5, Melbourne: Swinburne Press, 1988

Reference

**AJ105** Advanced Japanese 1A
No. of hours per week: six hours
Prerequisites: VCE Japanese or approved equivalent
Assessment: continuous

Subject aims and description
This subject consolidates students knowledge of basic grammar and extends the range of grammar patterns,
Japanese characters and vocabulary acquired at VCE level. It also provides training in aural/oral skills appropriate to post-VCE competency level.

Textbooks

References
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 6-8, Melbourne: Swinburne Press, 1988

AJ106 Advanced Japanese 1B
No. of hours per week: six hours
Prerequisite: AJ105 Advanced Japanese 1A or approved equivalent

Subject aims and description
This subject continues training in written and spoken Japanese. It introduces students to unabridged fiction reading texts. It extends the range of Japanese characters and begins training in honorifics appropriate to a range of adult communicative situations.

Textbooks

References

AJ202 Communication in Japanese
No. of hours per week: three hours
Prerequisite: AJ104 or AJ106
Assessment: continuous

Subject aims and description
This subject introduces topics relevant to language and effective communication. It aims at acquainting students with the differences between English and Japanese communication patterns. References in English are used. Students are encouraged to establish contact with Japanese people and to use data collected from interviews with them in the writing of essays and research assignments. The contact scheme is an important component of this course as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

Textbook

Preliminary reading

References

A comprehensive list of other references is available from the course coordinator.

AJ203 Japanese 2A
No. of hours per week: six hours
Prerequisite: AJ104 or approved equivalent
Assessment: continuous

Subject aims and description
This subject extends the range of language patterns, grammar and writing. It also provides further training in oral and aural Japanese. Students are introduced to various topics on Japanese culture and society through reading in Japanese. A variety of audio-visual material is used throughout the course.

It is highly recommended that students enrolled in this subject also enrol for AJ202 which is offered in both semesters.

Textbooks
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 6-8, Melbourne: Swinburne Press, 1988

References

AJ204 Japanese 2B
No. of hours per week: six hours
Prerequisite: AJ203 or approved equivalent
Assessment: continuous

This subject is a continuation of AJ203.

Textbooks
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 8-10, Melbourne: Swinburne Press, 1988

References
AJ205  Advanced Japanese 2A
No. of hours per week: six hours
Prerequisite: AJ106 Advanced Japanese 1B or an approved equivalent
Assessment: continuous

Subject aims and description
This subject extends the range of language patterns, grammar and writing covered in stage one subjects of the advanced stream. It also provides further training in oral and aural skills.

Textbooks

References

AJ206  Advanced Japanese 2B
No. of hours per week: six hours
Prerequisite: AJ205 Advanced Japanese 2A or approved equivalent
Assessment: continuous

Subject aims and description
This subject introduces students to unabridged non-fiction reading material. It provides further training in oral/aural skills. It accelerates students' acquisition of Japanese characters and provides training in writing of different styles of text.

Textbooks
Fukushima, N. Signs and Ads. Melbourne: Swinburne Press, 1993

Reference

AJ303  Japanese 3C
No. of hours per week: six hours
Prerequisite: AJ204 or approved equivalent
Assessment: continuous

Subject aims and description
This subject continues systematically to extend the students' use of spoken and written Japanese. Emphasis is placed on the correct use of an extended variety of syntactical and lexical items, colloquial and idiomatic expressions, intonations, etc., appropriate to a given situation and speech level. The aural and the reading components are integrated with each other to reinforce the students' knowledge.

Textbooks
Fukushima, N. Japan and Australia. Melbourne: Swinburne Press, 1992
Fukushima, N. Signs and Ads. Melbourne: Swinburne Press, 1993

Reference

AJ304  Japanese 3D
No. of hours per week: six hours
Prerequisite: AJ303 or approved equivalent
Assessment: continuous

Subject aims and description
This subject continues expansion of students' knowledge of spoken and written Japanese. Emphasis is placed on analysis of factors which determine selection of speech registers appropriate to a variety of communicative situations.

Textbooks
Fukushima, N. Japan and Australia. Melbourne: Swinburne Press, 1992

Reference

AJ305  Advanced Japanese 3C
No. of hours per week: six hours
Prerequisite: AJ206 or approved equivalent
Assessment: continuous

Subject aims and description
This subject continues to develop skills in written and spoken Japanese with particular attention to communication styles appropriate to different situations.

Textbooks
AJ306  **Advanced Japanese 3D**  
No. of hours per week: six hours  
Prerequisite: AJ305 or approved equivalent  
Assessment: continuous  

**Subject aims and description**  
This subject consolidates all language skills acquired in previous stages of the Advanced Japanese major.  

Three modules (for instance "Dietary Life in Japan", "Education in Japan" and similar) form the basis for extensive reading of reference literature, writing of reports in Japanese and oral class presentation in Japanese. Students will spend approximately 66 hours per semester in class and the remaining 18 hours conducting field work among the Japanese community in Melbourne. Classwork will be utilised for reading or reference material, lectures by specialists in the particular research area (Japanese) and discussion/debates of the field work findings (in Japanese).

**Textbook**  
Reference  

AJ307  **Reading Japanese Newspapers**  
No. of hours per week: four hours  
Prerequisite: AJ204, AJ205 or approved equivalent  
Assessment: continuous  

**Subject aims and description**  
This subject consists of a four hour class which deals with a number of issues on contemporary Japan, in Japanese. Students read a variety of unabridged newspaper articles which are complemented by additional language exercises.

**Textbook**  
Reference  

AJ308  **Japanese for Tourism and Hospitality**  
No. of hours per week: four hours  
Prerequisite: AJ204, AJ205 or approved equivalent  
Assessment: continuous  

**Subject aims and description**  
This subject is centered on development of spoken language suitable for interaction with Japanese customers/clients in a variety of service situations. Emphasis is placed on training in appropriate honorifics. A mandatory "work experience" component is included in the course. Students placed in hotels, souvenir shops and similar venues and their performance in the work situation is assessed by the "work experience" provider.

**Textbook**  
Reference  

AJ309  **Japanese for Business and Industry**  
No. of hours per week: four hours  
Prerequisite: AJ204, AJ206 or approved equivalent  
Assessment: continuous  

**Subject aims and description**  
This subject concentrates on development of suitable written and spoken language for interaction in business spheres. Emphasis is placed on writing of business letters and other documents and reading of business-related texts. Thorough training in honorifics is also emphasised.  
The double degree Business/Arts students are strongly recommended to enrol in this subject.

**Textbook**  
Reference  
References  

AJ400  **Japanese Society A**  
No. of hours per week: four hours  
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute.  
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment  
Assessment: continuous

**Subject aims and description**  
This subject provides an introduction to problems which exist in Japanese society. The topics cover family problems, old age and social security, social problems relating to crime, suicide, gangster organisations, youth violence; dietary life and common diseases; female inequality, and theories on Japanese society. The program is based mainly on newspaper items but some media broadcasts are included and specialist lecturers lead seminars on certain topics.

**Textbook**  
Fukushima, N. Japanese Society A. Melbourne: Swinburne Press, 1993  
Reference  
Additional reading materials and reading guides are distributed to students enrolled in the course

AJ401  **Japanese Society B**  
No. of hours per week: four hours  
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute.  
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment  
Assessment: continuous

**Subject aims and description**  
Students extend their reading of topics introduced in Japanese Society A and also develop their conversational skills in this subject.
AJ402  **Japanese Culture A**
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

**Subject aims and description**
In this subject topics covering various aspects of modern Japanese culture are studied, for example, Koreans in Japan, Japanese repatriates from China, education, corruption, Japanese language, media, arts, sport, Japanese abroad and international understanding.

**Textbook**

**Reference**
Additional reading materials and reading guides are distributed to students enrolled in the course

AJ403  **Japanese Culture B**
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

**Subject aims and description**
This subject allows students to extend their reading of topics introduced in Japanese Culture A and to develop their conversational skills.

**Textbook**

**Reference**
Additional reading materials and reading guides are distributed to students enrolled in the course

AJ404  **Japanese Business and Industry A**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

**Subject aims and description**
This subject covers topics related to business, for example, employment and working conditions; advanced technology; structure of industry; trade friction; automobile industry; Japan and world trade; energy and tertiary industry.
Most of the material on which the program is based is selected from newspapers but some media broadcasts are also included. Emphasis is on the acquisition of vocabulary, characters and some practice in translation and precis writing.

**Textbook**

**Reference**
Additional reading materials and reading guides are distributed to students enrolled in the course

AJ405  **Japanese Business and Industry B**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

**Subject aims and description**
Additional reading which extends the topics introduced in Japanese Business A is covered. Here the emphasis is placed on the comprehension and active use of grammar structures. Students also develop their conversational skills in this subject.

**Textbook**

**Reference**
Additional reading materials and reading guides are distributed to students enrolled in the course

AJ406  **Japanese Politics A**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute. All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

**Subject aims and description**
In this subject students are introduced to various aspects of the Japanese political system through the reading of newspaper articles supplemented by some media broadcasts.
Topics include political parties and elections, Japan-Australia relations, textbook controversy, defence, anti-nuclear movements, administration, government interference, politicians travelling abroad, environmental protection and refugee policy.

**Textbook**


**Reference**


**Additional reading materials and reading guides are distributed to students enrolled in the course**

**AJ407 Japanese Politics B**

(Not offered in 1994)

- No. of hours per week: four hours
- Prerequisite: applicants must have a degree with a major in the Japanese language, or equivalent, from a recognised university, college or institute.
- All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
- Assessment: continuous

**Subject aims and description**

This subject covers reading and conversation which extends to topics introduced in Japanese Politics A.

**Textbook**


**Reference**


**Additional reading materials and reading guides are distributed to students enrolled in the course**

**AJ420 Graduate Diploma in Japanese for Professionals 1A**

- No. of hours per week: six hours — language component; two hours (or equivalent) — background component
- Prerequisite: applicants must have a degree, or equivalent, from a recognised university, college or institute and be employed, or have prospects of employment, in an area requiring Japanese language skills and knowledge of the cultural, social, political and economic aspects of contemporary Japan.
- Assessment: continuous

**Subject aims and description**

All students take this subject in first semester of first year. In addition to an introduction to the basic features of Japanese grammar, reading, speaking and writing covered in the language component a series of seminars on Japanese culture and history are included in the coursework. The language component is assessed by regular tests and assignments and all students must present a seminar paper and write a research essay for assessment of the culture and history component.

**Textbooks**


**References**


A list of references for the culture and history component is available from the course co-ordinator.

**AJ421 Graduate Diploma in Japanese for Professionals 1B**

- No. of hours per week: six hours — language component; two hours (or equivalent) — background component
- Prerequisite: AJ420
- Assessment: continuous

**Subject aims and description**

This subject is taken in the second semester of the first year. All students will continue their study of basic Japanese grammar, reading, speaking and writing. The language component is assessed by regular tests and assignments. The non-language component consists of seminars on contemporary Japanese society.

**Textbooks**


**References**


A list of references for the contemporary Japanese society is available from the course co-ordinator.

**AJ422 Graduate Diploma in Japanese for Professionals 2A**

- No. of hours per week: six hours — language component; two hours (or equivalent) — background component
- Prerequisite: AJ421
- Assessment: continuous

**Subject aims and description**

This subject is taken in the first semester of the second year. The language component includes advanced grammar classes and a reading and conversation module tailored to suit students' professional language needs. The non-language component consists of seminars on the Japanese economy and business.

**Textbooks**


A list of references for the Japanese economy and business component is available from the course co-ordinator.
Subject aims and description
This subject is a continuation of AK103 Korean 1A.

Students undertaking a major in Korean are strongly advised to enrol for AK102 Traditional Korea.

AK205  Korean 2A
No. of hours per week: six hours, day-time
Prerequisites: AK103 and AK104, or equivalent
Assessment: continuous

Subject aims and description
The object will be to extend the students' command of modern Korean. This will entail further instruction in language patterns, grammar, reading, writing, aural comprehension with increasing emphasis on media Korean and on socio-linguistics. A wide range of audio-visual materials will be used, including language slides, cassette tapes, realia, and video-cassettes. Audio cassettes of the course material will be available to students for purchase or loan. It is highly recommended that students enrolled in this subject also enrol in AK207 and AK208.

Textbooks

AK206  Korean 2B
No. of hours per week: six hours, day-time
Prerequisite: AK205
Assessment: continuous

Subject aims and description
This subject is a continuation of AK205. It is highly recommended that students enrolled in this subject also enrol in AK207 and AK208.

Textbooks

AK207  Korean Society
No. of hours per week: three hours
Prerequisites: nil, except in the case of students taking an Asian Studies major, who must have any stage one political studies subject or equivalent. For those enrolled in the double degree course the prerequisite is AK102
Assessment: continuous

Subject aims and description
Over the past 100 years or so, Korea has passed through periods of social upheaval and foreign encroachment to its present status as a divided country. Often referred to as 'another Japan,' Korea nevertheless retains an ancient and highly individual civilisation that is under-studied and poorly understood in the West. This subject deals with aspects of Korean society since 1876, including topics such as intellectual history, the Japanese Colonial experience, religion in modern Korean society, rural-urban migration, and women's issues.
References

Note: The above sources will be supplemented by a variety of specialist journal articles.

AK208 Korean Politics and Economy
No. of hours per week: three hours
Prerequisites: nil, except in the case of students taking an Asian Studies major, who must have any stage one political studies subject or equivalent
Assessment: continuous

Subject aims and description
The objective is to analyse the political, social and economic sources of Korea's remarkable transformation in the postwar era. The subject investigates the role of the Korean state, big business and labour in the process of industrialization. It also assesses the role external conditions, such as Korea's position in the world economy and its relations with other powers, may have had on the shaping of Korea's development. Areas examined include DPK-ROK relations, ROK-US relations, Korea's role in the Pacific Rim and APEC with special emphasis on Australia-Korea relations.

References
Han, Sung Jo. The Failure of Democracy in South Korea. University of California Press, 1974

AK303 Korean 3C
No. of hours per week: six hours
Prerequisites: AK205 and AK206, or equivalent
Assessment: continuous

Subject aims and description
This subject continues to extend students' command of modern Korean in a variety of spoken and written contexts. The language will be taught at both the written level, utilising a variety of contemporary sources, such as the electronic and print media and at the more colloquial level, where individual conversation practice on a wide range of topics is offered.

Textbooks
Kim, S, New Korean Reader 1, Melbourne: Swinburne Press, 1991

AK304 Korean 3D
No. of hours per week: six hours
Prerequisite: AK303 or approved equivalent
Assessment: continuous

Subject aims and description
This subject is a continuation of AK303.

Textbook

AK305 Reading Korean Newspapers
No. of hours per week: four hours
Prerequisite: AK206 or approved equivalent
Assessment: continuous

Subject aims and description
This subject deals with a number of contemporary issues in Korea studied through the language. Materials are drawn from a variety of contemporary media sources, and presented in such a way as to encourage further development of oral skills.

Textbook

AK400 Korean Society A
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee, and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

Subject aims and description
This subject provides an introduction to issues of significance in Korean society. The program is based mainly on newspaper items, but some media broadcasts are included.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course

AK401 Korean Society B
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee, and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment
Assessment: continuous

Subject aims and description
Students extend their reading of topics introduced in AK400 and also develop their conversational skills in this subject.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course
AK402 **Korean Culture A**
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

**Subject aims and description**
In this subject topics covering various aspects of modern Korean culture are studied.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK403 **Korean Culture B**
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

**Subject aims and description**
This subject allows students to extend their reading of topics introduced in AK402 and to develop their conversational skills.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK404 **Korean Business and Industry A**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

**Subject aims and description**
This subject covers topics related to business, for example, employment and working conditions; advanced technology; structure of industry; Korea and world trade; energy and tertiary industry.
Most of the material on which the program is based is selected from newspapers but some media broadcasts are also included. Emphasis is on the acquisition of vocabulary, and practice in translation and precis writing.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK405 **Korean Business and Industry B**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

**Subject aims and description**
Additional reading which extends the topics introduced in AK404 is covered. Emphasis is placed on comprehension and development of conversational skills in this subject.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK406 **Korean Politics A**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

**Subject aims and description**
In this subject students are introduced to various aspects of the Korean political system through the reading of newspaper articles supplemented by some media broadcasts. Topics include political parties and elections, defence, anti-nuclear movements, administration, and environmental protection.

Reference
Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK407 **Korean Politics B**
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: applicants must have a degree with a major in the Korean language, or equivalent, from a recognised university, college or institute.
All applications are assessed by a selection committee and in certain cases applicants may be required to complete appropriate subjects of the Bachelor of Arts degree course, or undertake a preliminary reading course before being accepted for enrolment.
Assessment: continuous

Note: To obtain an overall pass mark, a pass in each section of the course is required.
Subject aims and description
This subject covers reading and conversation which extends students' ability in topics introduced in AK406.

Reference

Reading materials and reading guides will be distributed to students prior to commencement of the course.

AK420 Graduate Diploma in Korean for Professionals 1A
No. of hours per week: six hours — language component; two hours (or equivalent) — background component
Prerequisite: applicants must have a degree, or equivalent, from a recognised university, college or institute
Assessment: continuous

Subject aims and description
All students take this subject in the first semester of first year. In addition to an introduction to the basic features of Korean grammar, reading, speaking and writing covered in the language component, a series of seminars on Korean culture and history are included in the coursework. The language component is assessed by regular tests and assignments and all students must present a seminar paper or write a research essay for assessment of the culture and history component.

Textbook

References
A list of references for the culture and history component is available from the course coordinator.

AK421 Graduate Diploma in Korean for Professionals 1B
No. of hours per week: six hours — language component; two hours (or equivalent) — background component
Prerequisite: AK420
Assessment: continuous

Subject aims and description
The subject is taken in the second semester of the first year. All students will continue their study of basic Korean grammar, reading, speaking and writing. The language component is assessed by regular tests and assignments. The non-language component consists of seminars on contemporary Korean society.

Textbook

References
A list of references for the contemporary Korean society component is available from the course coordinator.

AK422 Graduate Diploma in Korean for Professionals 2A
No. of hours per week: six hours — language component; two hours (or equivalent) — background component
Prerequisite: AK421
Assessment: continuous

Subject aims and description
This subject is taken in the first semester of the second year. The language component includes advanced grammar classes and a reading and conversation module tailored to suit students' professional language needs. The non-language component consists of seminars on Korean politics.

Textbooks
Kim, S. Let's Talk in Korean 1, Melbourne: Swinburne Press, 1993

References
A list of references for the Korean politics component is available from the course coordinator.

AK423 Graduate Diploma in Korean for Professionals 2B
No. of hours per week: six hours — language component; two hours (or equivalent) — background component
Prerequisite: AK422
Assessment: continuous

Subject aims and description
This subject is the continuation of AK422 Graduate Diploma in Korean for Professionals 2A with similar content and assessment for both the language and background components. The background component deals with the economy of contemporary Korea.

Textbooks
Buzo, A.F. Modern Korean Literature Reading Passages Melbourne: Swinburne Press, 1990

References
A list of references for the economy component is available from the course coordinator.

AL100 Twentieth Century Literature
No. of hours per week: three hours
Prerequisite: nil
Assessment: continuous

Subject aims and description
This subject explores the impact of twentieth century innovation and experimentation in the arts on the dominant forms of literary representation and interpretation. The implications of contemporary thought about language will be considered, particularly in relation to the emergence of new critical methods. These have challenged assumptions about what literature is, its relationship to society, and how it should be interpreted and valued.

References

AL101 Nineteenth Century Literature
No. of hours per week: three hours
Prerequisite: nil
Assessment: assignments and examination

Preliminary reading
As for AL100
AL202  **Contemporary Australian Writing**
No. of hours per week: three hours
Prerequisites: AL100 or AL101 or approved equivalent, and AP112 for students majoring in Australian Studies
Assessment: continuous

**Subject aims and description**
The subject introduces students to the various kinds of writing being practised by contemporary authors. A diversity of forms will be examined — poetry, fiction, drama, non-fiction (autobiography and biography), and aboriginal writing, as well as the contribution made to Australian literature by authors for whom English is not their first language. Students will keep a journal as a record of preparation for the discussion-based class. An oral presentation will be made of a piece of Australian writing that is not a set text.

**Reference**

AL204  **Reading, Writing and Criticism**
No. of hours per week: three hours
Prerequisites: AL100 or AL101, or approved equivalent
Assessment: essay, folio and participation in seminars and workshops

**Subject aims and description**
This subject is an exploration of the relationship between various theories and practices of writing. Combining modern literary and critical theories, practical workshop writing, and the examination of a range of literary models, it actively involves students in a dynamic investigation of what writing is, how it is produced and how it operates within a changing culture.

**Recommended reading**

AL205  **American Literature**
No. of hours per week: three hours
Prerequisites: AL100 or AL101 or approved equivalent
Assessment: continuous

**Subject aims and description**
This subject offers a thorough survey of the important literary landmarks from the nineteenth and twentieth centuries. Emphasis will be placed on the connections between literature and developments within culture and society. Also, the historical emergence of a "modern" literary tradition will be considered.

**Preliminary reading**

AL302  **Australian Literature — 19th Century**
No. of hours per week: three hours
Prerequisites: two stage two literature subjects or approved equivalents
Assessment: essay, class paper and class contribution

**Subject aims and description**
The development of the novel and the short story in Australia during the 19th century up to the time of Federation. Poetry during the 19th century and a comparison of a filmic text of the novel. Students will make an oral presentation reviewing text that is not set for study, and keep a journal to record their class discussions. Classes will be discussion-based.

**Preliminary reading**

AL303  **Australian Literature — 20th Century**
No. of hours per week: three hours
Prerequisites: two stage two literature subjects or approved equivalents
Assessment: essay, class paper and examination; class contribution

**Subject aims and description**
From Federation to the present day. There will be a study of poetry, fiction, short stories and a play reading. Comparisons will be invited between filmic and written texts. Students will make an oral presentation reviewing text that is not set for study, and keep a journal as record of preparation for class discussions. Classes will be discussion-based.

**Preliminary reading**
As for AL302

AL304  **Cross-cultural Perspectives**
No. of hours per week: three hours
Prerequisites: two stage two literature subjects or approved equivalents
Assessment: essay, class paper, examination, class contribution

**Subject aims and description**
The subject seeks to explore, by a close analysis of significant texts of cross-cultural encounters, the ways in which different cultures have sought to explain and interpret each other by thinking about and interacting with each other. It focuses on non-English writers from mainly India, Africa and the Caribbean and their creative manipulation of the English language to comment on their own traditions and history, or to interpret the interaction between *Eastern/African* and Western cultures and values.

AL305  **Literature of the United States**
No. of hours per week: three hours
Prerequisites: two stage two literature subjects or approved equivalents
Assessment: essay, class paper, examination, class contribution

**Subject aims and description**
This subject combines 19th and 20th century literary traditions. The 19th century concentrates on seminal literary movements and authors, with particular emphasis placed on significant connections between literary works and the contemporary intellectual climate and social ethos. In the
20th century the emphasis is on developments and continuities of earlier movements and initiatives, as well as important changes marking the emergence of ‘modern’ literature.

Preliminary reading

*AL306 Renaissance Literary Culture
(Not offered in 1994)
No. of hours per week: three hours
Prerequisites: two stage two literature subjects or approved equivalents
Assessment: continuous

The principal aim of this subject is to critically investigate the ways in which we read and interpret the literature of the Renaissance. Not losing sight of our position as late twentieth century readers, this subject explores the place that literature occupied within Renaissance culture as a whole. Drawing on contemporary theoretical models, it seeks to relate the historical phenomenon of the Renaissance to the modern/postmodern debate.

Recommended reading

* Not available to students who have previously passed AL203 Renaissance Literature.

AL400 Reading and Writing Seminar
No. of hours per week: two hours per fortnight over two semesters
Assessment: folio and participation in seminars and workshops

Subject aims and description
The aim of this subject is to present students with a wide variety of options in writing and its production, together with a time and a place to explore in greater depth elements of the elective subjects which are of special interest to them. Seminars may take a variety of forms, from "Writers Reading" sessions in which original work is presented, to the formal and informal seminar, the writers’ workshop, the element of dramatic performance. As part of their course students will be encouraged to attend and report on public functions such as the Melbourne Writers’ Festival and participate in community arts events, e.g. open reading at various Melbourne venues. It is envisaged that students will produce a collection of their writing as part of the year’s activities.

References

AL401 Writing Project
No. of hours per week: two hours per fortnight over two semesters
Prerequisite (or co-requisite for full-time students):

AL400 Reading and Writing Seminar
Instruction: workshop and supervision
Assessment: an extended piece of writing and workshop participation

Subject aims and description
This subject provides students with the opportunity to work on an extended piece of writing in an atmosphere of support, encouragement and mutual critical advice. It allows for expansion and elaboration of themes encountered in previous writing subjects, with an anticipated outcome being "finding one's own voice": A series of workshops will provide the basis for the evolution of the longer work out of preliminary drafts.

Reference

AL402 Writing, Theory, Praxis
No. of hours per week: three hours
Assessment: essay, creative piece, folio and workshop participation

Subject aims and description
This subject is an exploration of the relationship between various theories and practices of writing. Combining modern literary and critical theories, practical workshop writing, and the examination of a wide range of literary genres, this subject is an investigation of what writing is, how it is produced and how it operates within a changing culture.

The aim of this subject is to involve students in the creative and critical processes of reading and writing. As a departure from historicist studies of literary theory, reading, writing and criticism will be conducted in a way that invites students to explore and to investigate questions rather than seek pre-determined answers. Apart from coordinated class and assessment activities students will also be encouraged to pursue their own theoretical inquiries and creative projects and to initiate alternative forms of presentation.

References
Frame, T. To the Island. London: Paladin, 1987

AL403 Narrative Writing
No. of hours per week: three hours
Assessment: a folio of writing. workshop participation and exercises

Subject aims and description
This subject will introduce students to the range of skills required of the professional writer of fiction. A series of workshop exercises will develop skills in creating character, dialogue and dramatic tension. Point of view, voice, form, style, plot, tone, and description and their place in building a story will be explored. The importance of revision, listening to criticism and developing a self-critical stance will be stressed, together with techniques for developing these personal skills. Developing skills in critical and creative thinking and the application of these skills in various practices of writing fiction will be included: e.g. plugging into both rational and irrational processes; the role of conjectural thinking, intuition and luck; the use of analogies,
metaphor, and associative thinking; perceiving and creating relationships. Emphasis is placed on the participants as writer and critic.

References

Subject aims and description
This subject explores the relationships between discourse and reception through the adaptation of texts. It will be organised around a case study (e.g., multi-media adaptations of Bram Stoker's Dracula), and involve the examination of issues of reproduction and authenticity, as well as the cultural impact of new writing technologies on popular textual discourse. Students will be encouraged to use and reflect upon different electronic modes of communication and delivery, and to utilize computer applications to produce an adaptation proposal.

References
Ong, W. Orality and Literacy: The Technology of the Word. London: Methuen, 1982

Subject aims and description
This subject is designed to accommodate student-initiated special projects. There will be a written contract between student and supervising lecturer, issued as a preliminary to enrolment, which will state the project, the form of assignment and the date of completion of the project. As an example, this subject offers the opportunity for students to work in genres such as romance, science fiction, fantasy and the thriller, where learning opportunities and experiences exist outside formal academic institutions, with the Nwa Mob, Sisters in Crime, and fanzines, etc.

References
Chadwick, P. Media Mates: Carving up Australia's Media, South Melbourne: Macmillan, 1989
Inglis, K.S. This is the ABC. The Australian Broadcasting Commission 1932-1983. Melbourne: Melbourne University Press, 1983

Subject aims and description
This subject examines the convergence of broadcasting and telecommunications in the context of political, economic and social change associated with new media. New communications technologies, such as cable and pay television, teletext and videotext, video-cassette recorders, domestic and direct broadcast satellites, and video disc are discussed in the context of changes to traditional broadcasting systems. Notions such as technological determinism, media plurality, information access and equity, are related to an alleged new information revolution. The effects of new communications technologies on content, diversity and social needs in Australia are canvassed. As well,

The texts for study will be selected from fiction and documentary films, television series, news and current affairs programs, music videos, advertisements, variety and sports shows, and children's programs. They will be examined within the context of textual theory, with particular attention being given to their visual aspects.

References
Selbach, T. and Selbach, V.V. An Introduction to Film, 2nd ed., Boston: Little, Brown & Co, 1987

Subject aims and description
This subject is an introduction to some of the major historical and contemporary issues about broadcasting as a medium of mass communication, primarily in an Australian context. It examines the political context of broadcasting institutions, public and private, and their relationships with other social institutions. Key political, social and ethical issues associated with broadcasting are canvassed, such as the ownership and control of radio and television stations, the regulatory climate, accountability in programming, relationships to audiences, and journalistic practices and ethics. Vexed issues, such as media freedom and reform, public participation in ownership and programming, regulatory changes in broadcasting, and professional journalistic standards are discussed from a range of perspectives.

References
Chadwick, P. Media Mates: Carving up Australia's Media, South Melbourne: Macmillan, 1989
Inglis, K.S. This is the ABC. The Australian Broadcasting Commission 1932-1983. Melbourne: Melbourne University Press, 1983

Subject aims and description
This subject examines the convergence of broadcasting and telecommunications in the context of political, economic and social change associated with new media. New communications technologies, such as cable and pay television, teletext and videotext, video-cassette recorders, domestic and direct broadcast satellites, and video disc are discussed in the context of changes to traditional broadcasting systems. Notions such as technological determinism, media plurality, information access and equity, are related to an alleged new information revolution. The effects of new communications technologies on content, diversity and social needs in Australia are canvassed. As well,
the cultural implications of new choices of media, made possible by technological change, are examined for special groups.

References
Barr, T., Challenges and Change, Melbourne: Oxford University Press, 1987
Wheelwright, E. and Buckley, K. (eds), Communications and the Media in Australia, Sydney: Allen and Unwin, 1987

AM203 Popular Culture
No. of hours per week: three hours
Prerequisites: AM102 or AM103
Assessment: continuous

Subject aims and description
This subject will introduce students to the current trends and debates in contemporary culture and cultural analysis. It will investigate the diversity of images, meanings and practices which comprise popular culture. Through analysis and discussion, attention will be drawn to processes of change and adaptation in the popular culture of the 1990s. The subject will also consider the commercial imperatives shaping popular culture and its multiple relations to political processes and to power relations. Major reference points in the subject will include post-modernism, feminism and analyses of late capitalism. Of particular importance will be the consideration of cultural meanings and practices in the current Australian context. Topics here include: youth culture, pub culture, weddings, the beach, soap opera, women’s magazines and sport.

References
Fiske, J. Understanding Popular Culture, Boston: Unwin Hyman, 1989
Fiske, J, Reading the Popular, Boston: Unwin Hyman, 1989

AM205 Special Issues in the Media
No. of hours per week: three hours
Prerequisites: AM102 or AM103
Assessment: continuous

Subject aims and description
This subject will investigate the major relationships between women and the media today. The general framework of enquiry will comprise representation, audience reception and media consumption practices, and employment. Students will be encouraged to develop a variety of skills in the exploration of issues pertaining to women. These involve both textual analysis, in particular the study of representations of women in media texts, and the examination of critical theory and research exploring issues in representation, reception and employment. Two particular concerns here include the special needs and practices of women as audiences and media users, and the structures and conditions affecting women’s employment in the media, especially given the current legislation governing equal opportunity.

References
Blonski, A. et al. (eds) Don’t Shoot Darling: Women’s Independent Filmmaking in Australia, Richmond: Greenhouse, 1987

AM206 Making News — The Theory and Practice of Journalism
No. of hours per week: four hours
Prerequisites: AM102 or AM103 and any stage two media studies subject or equivalent
Assessment: continuous

Subject aims and description
This subject takes both a theoretical and practical approach to the study of the media in Australia. It is divided into two areas of study: (i) a theoretical and critical view of the function and nature of the press in Australia (two hours per week); and (ii) practical lessons in news writing (two hours per week).

The first area of study offers an historical overview of the changing role of the press and examines the socio-political, ideological and economic influences which have shaped the modern newspaper industry in Australia. Newspaper traditions in other countries — such as the United States, the Swiet Union, Europe and South East Asia — will be compared and different newspapers in Australia will be examined for their similarities and differences. Key issues include freedom of the press, the concentration of newspaper ownership, the power of the press, the structure of news organisations, ethics, news values, bias, media accountability, defamation, privacy, and advertising.

The second area of study will focus on practical news writing and production skills. Students will be encouraged to write and submit stories for publication in community newspapers. Students will also learn basic computer word processing and desktop publishing skills.

References
Tiffen, R. The News from South-East Asia: the Sociology of News-making, Institute of Southeast Asian Studies, Singapore, 1978

AM207 Cultural Representation in Australia
No. of hours per week: three hours
Prerequisites: AM102 or AM103, and AP112 for students majoring in Australian Studies
Assessment: continuous

Subject aims and description
This subject explores processes of construction and maintenance of cultural identities in Australia. The first half of the subject concentrates on the representation of nationalism in film and television. The enquiry then broadens to consider representations of cultural difference, marginality and resistance. Included here is some analysis of cultural representation from the point of view of Aboriginal people, women and cultural minorities. Processes of cultural construction and demarcation are of central significance in this subject. The major visual texts to be analysed will be Australian feature films, with some consideration of Australian television and independent film.

References
Kaplan, E.A. Regarding Television: Critical Approaches — an anthology (Frederick, Md): University Publications of America, 1983

References
Tiffen, R. News from South-East Asia: the Sociology of News-making, Institute of Southeast Asian Studies, Singapore, 1978
AM300 Cinema Studies
No. of hours per week: four hours
Prerequisite: AM102 and any two stage two media studies subjects or equivalent
Assessment: continuous

Subject aims and description
The viewing material for this subject is a selection of films arranged generically (e.g., the musical, or the horror film, or the western, or the science-fiction film), thematically (the romantic drama, or the journey film, or the domestic drama), or stylistically (the film noir, or the problems of realism, or 'to cut or not to cut?'). These films will provide study samples for a pursuit of ideas introduced during the previous two years of the course into a systematic analysis of film.

The emphasis is upon the practice of film criticism. Attention is focused upon the usefulness of structuralist and semiological studies, and their function in relation to the humanist discourse which dominates more traditional critical work. In this context, particular questions to do with the developing study of film will be on the agenda for ongoing consideration: for example, the ways in which ideology is inscribed into the works examined (as well as into the methods of examination), for various systems of representation, for the usefulness of the work of the 'frame-by-frame heretics', for the kinds of relationships constructed between a film and its viewer, for the place of 'the author' in this process in relation to the formal and thematic organisation of the works which bear his/her name, for the usefulness of 'genre' studies, for the function of the 'star system', and for the relationship between the film, the industry and the culture in which they exist.

References
Grant, B.K. (ed.) Film Genre Reader. Austin: University of Texas Press, 1986
Cine-Action, Cinema Papers, The Journal of Popular Film and Television, Screen, Wide Angle

AM302 Radio Production and Criticism A
No. of hours per week: four hours
Prerequisites: AM102 or AM103 and any two stage two media studies subjects or equivalent
Assessment: continuous

Subject aims and description
This subject offers the opportunity to make, and critically assess, broadcast quality radio programmes. Practical skills covered include recording techniques, interviewing, scripting, narrating and editing.

There are many approaches to a theoretical investigation of radio. You can start with the skills used in criticism of literature and film. But the course also explores what is special about radio — how speaking differs from writing, and how listening differs from reading. And it also examines the way we understand information that we receive via the ear — as distinct from information we read or see.

Critical work will focus on Melbourne radio, from a mix of commercial, public and government stations. And these will be discussed in their historical and contemporary contexts. Material that is "airworthy" is submitted for use on community radio stations.

Textbook
Swinburne Radio Production Notes

References
Breath, B. Radio as a Means of Communication. Screen V20, Nos. 3/4
Crisell, A. Understanding Radio. London: Methuen, 1986
Hicks, M. Radio on Radio. Swinburne, 1985 (Audio Tapes)
Hood, D. Brecht on Radio. Screen V20, Nos. 3/4
Ong, W. Orality and Literacy. London: Methuen, 1982

AM303 Radio Production and Criticism B
No. of hours per week: four hours
Prerequisites: AM102 or AM103 and AM302, and any two stage two media studies subjects or equivalent
Assessment: continuous

Subject aims and description
This subject entails learning more radio forms and more about radio production. Students work in groups to produce a major piece for radio such as a feature documentary or radio drama. In addition students carry out individual work exploring the synthesis of theory and practice.

Liaison with community radio stations enables students to develop material and have it put to air.

The role of radio in our culture is considered from two perspectives. Firstly, how do the structural features of the medium affect the creation of its material or "cultural products"? And secondly, how is meaning created within radio? What are the "preferred meanings" in what we hear?

Textbook
Swinburne Radio Production Notes

References
As for AM302

AM306 Professional Attachment Program
Fifteen days
Equivalent value — one semester subject
Prerequisites: five media studies subjects
Assessment: continuous

This subject is available during semester two to a limited number of students. Those selected will be attached, after consultation, to a variety of media organisations. There they will be required to work under the direction of the supervising staff member. The program will be overseen by a member of the Swinburne media studies staff.

AM307 Information Society: Promises and Policies
No. of hours per week: three hours
Prerequisites: AM102, AM103 and two stage two media studies subjects or equivalent
Assessment: continuous
Subject aims and description
This subject is an examination of media and communications in the context of a post-industrial or information society. Key questions about the contemporary technological revolution are addressed, such as who decides about new technologies, and how, whose interests are served, how national policies are fashioned, and whose information needs will be met by these technologies of abundance. Crucial here is a variety of political, social and ethical issues, including vexed territory such as ownership and control of information systems, privatisation and de-regulation of broadcasting and telecommunications, corporate and community information systems and international information transfer. Considerable emphasis is placed on the methodology of investigation, analysis of reports and government inquiries, and the presentation of data and information. Students are encouraged to present their work in a form that will enable it to be available to the community.

References
Reinecke, I. Connecting You... Ringwood: Penguin Books 1985

* AM309 Community Press: Process and Production
No. of hours per week: four hours
Prerequisites: AM102 or AM103, AM206 and one other stage two media studies subjects or equivalent
Assessment: continuous

Subject aims and description
This subject examines a range of publications which serve specific community or special interest information needs in both a theoretical and practical way. The four-hour classes are divided into two areas of study: (i) the tradition of community press Australia, including suburban and regional newspapers, and the impact of new technology on the evolvement of publications such as newsletters and special interest magazines (two hours per week); and (ii) production of newsletters (two hours per week).

The first area of study will focus on the development of publications serving communities of interest. Relevant communications theories, notions of information agendas, sources of news, commercial and political influences, will be examined to develop an understanding of the influences which shape community publications.

The second area of study will focus on practical exercises in the production of newsletters and community interest magazines. Students will also develop basic desktop publishing skills using the Page Maker desktop publishing package.

References

AM404 Writing for the Media
No. of hours per week: three hours
Assessment: the production of a script, exercises and seminar participation

Subject aims and description
This subject involves the practice of writing for specific purposes within different sectors of the media: news reports, feature stories, press releases, advertorials, community press and in-house releases, and documentaries. It will take a case study approach which analyses the strategies and conventions utilized by different media to common subject matter. Students will also be expected to produce original material for different media, and to reflect theoretically on the implications of different media production on issues of reception and comprehension.

References
Ong, W. Orality and Literacy: the Technology of the Word. London: Methuen, 1982
Swinburne Radio Production Notes

AM406 Community Press: Process and Production
No. of hours per week: four hours
Assessment: by class exercises, sub-editing and layout, team publication project and individual newsletter

Subject aims and description
This subject examines a range of publications which serve specific community or special interest information needs. The subject has both a theoretical and a practical orientation. There are two main areas of study: the tradition of community press in Australia, including suburban and regional newspapers, and the impact of new technology on the evolution of publications such as newsletters and special interest magazines and; the production of newsletters using the pagemaker desktop publishing package.

References
Media Information Australia, selected articles

AM500 Globalisation: Media and Telecommunications
No. of hours per week: three hours
Prerequisites: nil
Assessment: seminar paper 40%, final report 60%

This subject examines the international market, policy and cultural trends in many fields of communications, with special attention to broadcasting, cinema, and telecommunications industries. It will examine many complex forces for change, particularly the increasing international trend towards privatisation, mega-amalgamation, liberalisation and deregulation. Special attention will be given to debates about international networking, cultural imperialism and globalisation, especially for television and cinema. Contemporary policy debates about the future of broadcasting, and the complex issues involved in the introduction of new communications technologies and about the associated institutional pressures, especially on public broadcasters, will be highlighted.
This subject also examines various schools of thought and practices of industry innovation and development in the context of information industries — telecommunications and information technology. It will analyse the last decade of Australia’s information industry policy under Labor, especially research and development policy, the Partnerships For Development program, IDAs, export enhancement and attempts at technological diffusion. Alternative international industry approaches, from the different perspectives of parties and government, carriers and suppliers, will be examined in the context of comparative policy models. The lessons of innovation will be drawn from case studies of success and failure in Japan, UK, USA, Sweden and New Zealand.

References

AM501 Communication Environments
No. of hours per week: three hours
Prerequisites: nil
Assessment: presentation of research proposal 50%, final report 50%

This subject examines the convergence of broadcasting and telecommunications in the context of political, economic and social change, especially in terms of the future of Australian society. Key questions are addressed about the communications revolution, such as who decides about the introduction of new technologies, and how, what choices may be available, whose interests are served, and whose needs may be met by these technologies of abundance. The new policy paradigm in Australian Broadcasting and Telecommunications — competition and choice — will be analysed, with special emphasis on the Telecommunications Act 1992 and the Broadcasting Services Act 1992. Methods of technological assessment will be examined, including issues related to the information needs of different Australians. Vexed questions about the cultural impact of programming, access and diversity, especially for indigenous people will be canvassed. Special attention will be given to major social and communications trends in Australia, and to the methodologies of future studies. Some modelling of strategic planning and strategic thinking will be offered, especially in the construction of possible scenarios for the future of Australian communications.

References
ABC 2000 (Australian Broadcasting Corporation)
Information Society 2000, Telecom Australia (forthcoming)
Alternative — AM407 Information Society 2000

Note — Course attendance based on AM307: Information Society Promises and Policies, but with more substantial assessment requirements.

AM502 Asian Communications
No. of hours per week: three hours
Prerequisites: nil
Assessment: seminar paper 40%, final paper 60%

This subject will offer a panorama of print, broadcasting and telecommunications issues, policies and practices in Asia and SE Asia. It will examine the relevance of western communications perspectives on Asia, and the complexity of issues such as media freedom, satellite TV and development journalism, in an Asian context. The changing scene in Asian broadcasting will be analysed, with special reference to debates about new communications technology — especially cable, pay and Star television — as well as about multi-media systems and the prospect of a Pan-Asia broadcasting network. In telecommunications, the significance of network modernisation will be analysed, especially in the context of the drive for privatisation and deregulation, and of the staggering levels of contemporary investment in new systems. Vexed issues will include the use of alternative media for social development, and the cultural impact and access of western media throughout Asia. National development models, especially those of Singapore, Malaysia and Thailand, will be analysed as comparative studies for desirable communications systems and development for Asia and SE Asia.

References
Jussawalla, M. and Huick, M. "Structural Change of Telecommunications in South East Asia": in Media Asia. Volume 19, No. 1, 1992
Peterson, N. "Asian News Values: Challenges and Change", in Media Asia. Volume 19, No. 4, 1992

AM503 Interrogating Texts: Cultural Dreaming
No. of hours per week: three hours
Prerequisites: nil
Assessment: seminar paper 40%, final paper 60%

This unit will explore issues attendant upon those in AM500 Globalisation, using as a launching pad the study of a variety of texts selected from film, television, literature, and print and sound media. Questions to be explored will be chosen from amongst: the function of theories of language and society in making "sense" of texts; the representation of journalism and the media on screen (in film and television); the depiction of the Third World in western fiction and nonfiction: the representation of technology in and through film and literature (with special emphasis on science fiction); the American entertainment industry's representation of the US in film and on television; images of Australia offered in the arts and the media; Australian film, television and literature into the '90s.

References
AM504  Professional Production
No. of hours per week: three hours
Prerequisites: nil
Assessment: production of a radio program or short film or television script

This subject is aimed at students including those working in the industry who have above average radio and print media skills. It has three areas of focus — radio, writing for the print media, and writing for film and television.

The radio stream consists of a series of seminars dealing with key management issues including station operations, audience research and analysis, marketing, human resources, the impact of new technology, and broadcast policy issues. Students taking the radio stream may produce broadcast quality programs during the semester. This could be, for example, a major documentary or drama, or a multi-track production which draws on the student’s production, research and writing skills, and creative ability.

The print stream will focus on advanced investigative reporting and feature writing skills. Students taking the film and television stream will develop a script proposal, and a script for a short film or television program.

Students taking either the print or the film and television writing streams will also attend seminars which address different forms of writing.

References
Ong, W. Orality and Literacy: the Technologizing of the Word. London: Methuen, 1982

AM505  Workplace Practice
No. of hours per week: three hours
Prerequisites: nil
Assessment: presentation of workplace proposal 40%, final report 60%

This subject aims to give students in the final stages of the Masters the opportunity to undertake a detailed analysis of the institutional and professional processes of a media organisation. Students can nominate which organisation they wish to be placed in, and they will be required to consult with management when working out the details of the study. It would be expected that students will produce a detailed case study which addresses issues such as the media model under which the organisation operates, management structures, staffing and human resources, training, technology, target audiences and programming.

Students can also negotiate with the media organisation to undertake a consultancy: for example, to research the feasibility of a particular project such as the conversion of radio equipment from analogue to digital, the implementation of a program to increase Aboriginal and Torres Strait Islander employment, or to examine the impact of new broadcast regulations on the organisation.

Possible participating organisations: ABV-2, 3LO, 3RN, 3CR, 3RRR-FM, 3PBS-FM, 3AW, SBS-TV.

AM506  Thesis
Students are required to write a minor thesis, of approximately 20,000 words, as a mandatory course requirement. The conceptual and methodological underpinning for the thesis will centre on the two core units. AM500 — Globalisation — Media and Telecommunications and AM503 Interrogating texts: Cultural Dreaming, though thesis topics may also emerge from AM501, AM502, AM504 and AM505. International students will have the opportunity to pursue topics related to their country of origin or explore comparative research subjects. There may be the possibility of electronic access to national and international databases for research. Supervision of these may be conducted with electronic means to support the supervisory-student interaction.

AM507  Information Society 2000
No. of hours per week: three hours
Prerequisites: nil
Assessment: seminar paper 40%, final report 60%

This subject is an examination of media and communications in the context of a post-industrial or information society. Key questions about the contemporary technological revolution are addressed, such as who decides about new technologies, and how, whose interests are served, how national policies are fashioned, and whose information needs will be met by these technologies of abundance. Crucial here is a variety of political, social and ethical issues, including vexed territory such as ownership and control of information systems, privatisation and de-regulation of broadcasting and telecommunications, corporate and community information systems and international information transfer.

References

AP100  Australian Politics
No. of hours per week: three hours
Prerequisites: nil
Assessment: by class work and essays

Subject aims and description
This subject is an introduction to Australian politics. To begin with the subject covers the basic framework of government. The following topics are considered: the electoral system, the constitutional basis, federalism and the Westminster system, parliament, cabinet and the public service, the organisation of the main political parties, and the role and future of minor political parties. These topics are taught at a level which presumes no previous knowledge of Australian politics. However, as the subject progresses students are introduced to the broader dimensions of politics which include the role of pressure groups, their basis of support, in the electorate and in society at large, and their bearing on Australian democracy.

Preliminary reading
AP101  **Foundations of Modern Politics**
- No. of hours per week: three hours
- Prerequisites: nil
- Assessment: by class work and essays

**Subject aims and description**
This subject deals with the origin and development of the main force shaping world politics since 1945 — namely the Cold War between the US and the USSR. It deals with their emergence as world powers, the origin of the conflict in post-war Europe, and follows the development of US-Soviet relations from the Truman-Stalin era to the break-up of the USSR in the early 1990s. Particular emphasis is placed on the impact of the Cold War on Australia's strategic environment, the Asia-Pacific region, and topics include the Korean, Vietnam and Afghanistan wars.

**Textbooks**

**References**

AP112  **Australian Identities**
- No. of hours per week: three hours
- Prerequisites: nil
- Assessment: by essays and tutorial participation

**Subject aims and description**
This is the first in a new sequence of *Australian Studies* subjects. This subject examines four ways in which people identify themselves as members of society. It begins by looking at national identity to see how different ideas of what it means to be Australian have developed during the last one hundred years. It goes on to explore the role of families in moulding gender identity. This is followed by a study of how people have defined themselves in terms of the work they do and then looks at the way cultural heritages have shaped ethnic identity. The subject concludes with a discussion of the social movements that have grown out of these collective identities.

**Preliminary reading**

AP113  **Asia: Politics and Development**
- No. of hours per week: three hours
- Prerequisites: nil
- Assessment: by essays and tutorial participation

**Subject aims and description**
This subject examines the social and economic changes taking place in contemporary Asia. The aim is to understand what is happening in this region which is of immense importance to Australia. The emergence of regional superpowers, growth in high-tech industries, political instability and continuing poverty are continuing characteristics of contemporary Asia. How did these occur? Topics include: politics of aid, commercialisation of agriculture, the environment, industrialisation and labour and the role of the state.

**References**
McCoy, A.W. *Priests on Trial*. Ringwood, Vic.: Penguin, 1984

AP114  **Australia and Asia**
- No. of hours per week: three hours
- Prerequisites: nil
- Assessment: continuous

**Subject aims and description**
This subject introduces students to Australia's relations with the nations of Asia through a series of thematic classes and case studies. It outlines the contours of the debate concerning Australia's place in Asia and traces the process of foreign policy making, outlining institutional structures, pressure groups and key concepts such as the "national interest". The various elements of foreign policy are examined — trade, defence and security, aid and political relations. The course has a historical dimension and highlights the ways in which policies towards specific Asian nations have changed over time.

**References**
Evan, G. and Grant, B. *Australia's foreign Relations in the World of the 1990s*. Carlton, Vic.: Melbourne University Press, 1992

AP115  **Introduction to Modern Asia**
- No. of hours per week: three hours
- Prerequisites: nil
- Assessment: continuous

**Subject aims and description**
This subject provides an introduction to modern Asia through the biographical autobiography accounts of four major leaders who fundamentally altered the political framework of their countries. They include Mahatma Gandhi, Mao Zedong, Benazir Bhutto and Corazon Aquino. The course will consider their contribution within the broader context of nationalism, revolution and modernisation. It offers important insights into the history, politics and culture of diverse societies in Asia. Some of the topics covered include India's nationalist movement, the growth of communism in China, and democratisation in the Philippines and Pakistan.

**References**

AP200  **Advanced Australian Politics**
- Not offered 1994
- No. of hours per week: three hours
- Prerequisite: any stage one political studies subject or approved equivalent. A background in Australian Politics and/or social and political theory is desirable.
- Assessment: continuous

**Subject aims and description**
In this subject an analysis of power structure in Australia is attempted. There are four main sections:

**Section 1**
The Condition of the People. This section surveys distribution of wealth, distribution of income, aspects of poverty, and social mobility.

**Section 2**
The Will of the People. This section analyses the social policy of the *Whitlam* Government 1972-75, and the electorate's response.
Section 3
The Consciousness of the People. This section looks at theories of hegemony and class consciousness in Australia.

Section 4
The Rule of the People? This section considers the question: who rules?

Reading guides are distributed.

AP201  **Political Sociology**
No. of hours per week: three hours
Prerequisite: any stage one political studies subject or an approved equivalent
Assessment: continuous

**Subject aims and description**
In this subject, key aspects of the relationships between politics and society are examined. It is an introduction to the theme of power and its exercise. Its main objective is to provide students with the basic skills necessary to identify and understand major forms of power, which they can apply to their immediate environment or to the broader dimensions of society.

Topics to be considered include the historical background to political sociology; classic views about the nature of human beings and society; an analysis of the concepts of power, authority and influence, with reference to Max Weber; the problem of locating power in modern society and an examination of three theories of power and society, namely Marxist, elitist and pluralist theories; the definition of democracy and the debate about its various models.

**Preliminary reading**

AP202  **Europe, Capitalism and The Third World**
No. of hours per week: three hours
Prerequisite: any stage one political studies subject or approved equivalent
Assessment: by essays and tutorial participation

**Subject aims and description**
This subject relates the shaping of today's Third World to the emergence of capitalism in Western Europe. It examines the forces that have produced the uneven development where some parts of the world are industrialised and rich and other parts still technically primitive and poor.

The broad themes of the subject are the social origins of capitalism and the process of proletarianisation, the Industrial Revolution, European colonisation and the making of a world economy.

**Preliminary reading**

Textbook
Wolf, E. *Europe and the People Without History*. Berkeley: University of California, 1982

AP204  **Modern Japan**
No. of hours per week: three hours
Prerequisite: any stage one political studies subject or an approved equivalent
Assessment: by class work and essays

**Subject aims and description**
Discussion centres around the problems of Japanese nationalism reflected in the nature of Japan's modernisation, the consequences of its modernisation, the defeat, and re-emergence as an economic power. An examination of the social configuration of Japanese society will shed light on what are claimed to be the characteristic features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operations and employer-employee relations.

**Preliminary reading**

AP206  **Politics of China A**
(This subject cannot be taken by students who have passed AP305 Comparative Politics: China A or AP309 Chinese Politics A)
No. of hours per week: three hours
Prerequisites: one stage one political studies subject
Assessment: continuous

**Subject aims and description**
In 1949 the Chinese Communist Party came to power after the defeat of the Nationalists. This subject investigates the development of "New China" through an examination of the political system, different models for economic growth, social restructuring, mass campaigns and the place given to dissent. Through an examination of these issues, an understanding of the factors that have made China the nation it is today, its political culture, shifting ideological framework and changing relations with the West will be reached. By the end of the subject, some insights into the future options that lie before China will be possible.

**References**

AP207  **Modern Australia**
No. of hours per week: three hours
Prerequisite: any stage one political studies subject or equivalent
Assessment: by essays and tutorial participation

**Subject aims and description**
This subject explores the patterns of change that have shaped contemporary Australia. It starts by looking at the attempts to build a fairer society at the turn of the century and at the modern social institutions which emerged from that process. It next considers the impact of the Great War, prosperity in the 1920s and depression in the 1930s on the manner in which wealth and power were shared. It then examines how the experience of those thirty years shaped the grand plans to establish a more just and secure nation after the Second World War. Through a survey of the post-war boom, it analyses the effects of Australia's relations with its major allies on domestic and foreign policies. The subject concludes with a study of the ways in which recent governments have tried to adapt national interests to a rapidly changing world.

**Preliminary reading**
AP300  Public Policy in Australia
No. of hours per week: three hours
Prerequisites: AP100 or equivalent, two stage two political studies subjects
Assessment: continuous

Subject aims and description
In this subject the decision and policy-making structures and processes of the Australian Federal Government are examined. While the focus is on the Federal Government, other institutions and actors in the policy process will also, where necessary, be examined. This could include state government, business and labour organisations, and other interest and pressure groups. The approach to the study of the decision and policy-making process is through a critical evaluation of the performance and programs of the Hawke and Keating Labor Governments.

There are lectures and workshops dealing with selected areas of labor government policy. Students are able to specialise in an area of government policy and are asked to submit a policy case study at the end of the semester.

Textbook

Reference

AP303  Politics of the USSR
(Not offered in 1994)
(This subject cannot be taken by students who have passed AP302 Comparative Politics The Soviet Union)
No. of hours per week: three hours
Prerequisites: two stage two political studies subjects
Assessment: continuous

Subject aims and description
This subject introduces students to the political history of the Soviet Union from 1924 to the Gorbachev era. It looks at the decision to collectivise agriculture and embark on a crash programme of industrialisation in the late 1920s as the key for understanding Stalin's rise to power and the establishment of his dictatorship. The political economy of the stalinist system in the 1940s and 1950s is examined with the aim of providing a framework for understanding subsequent attempts at economic and political reform. Kruschev's rise to power is considered and the limitations of his populist approach to reform examined. The ousting of Kruschev and the establishment in power of Brezhnev is interpreted as a victory for the party apparatus and the consolidation of a conservative bureaucratic dictatorship. The failure of the reforms under Andropov provides the context for understanding the radicalisation of the Gorbachev reform agenda. The policies of glasnost and perestroika are interpreted as a response to the failure of Andropov's technocratic economic reforms. The priority given by Gorbachev to democratic political reforms provides a basis for understanding his loss of the political agenda and the consequent collapse of the Soviet Union as a communist state.

References

AP304  Japan in Asia
No. of hours per week: three hours
Prerequisites: two stage two political studies subjects
Assessment: by seminar participation and papers

Subject aims and description
A study of Japan's involvement in south-east and east Asia since 1952. Students will be required to investigate Japan's relationship with one nation and to examine the ramifications of Japan's expanding role and influence in the Asia-Pacific region and the implications of the emerging patterns of political relationships, investment, aid and trade.

AP308  Seminar in Political Studies
No. of hours per week: three hours
Prerequisites: two stage two political studies subjects
Assessment: continuous

Subject aims and description
A series of advanced seminars on contemporary issues or an intensive study of a specific topic in political studies.

The topics to be offered are specific illustrations of one or more of the following broad themes within political studies: the politics of modern industrial society, social and political change in Asia, and the political economy of underdevelopment. These seminars include considerations of the methodological questions involved.

In 1994 the subject will be devoted to the study of political elites in Australia.

AP311  Politics of China B
(This subject cannot be taken by students who have passed AP310 Politics of China B)
No. of hours per week: three hours
Prerequisites: two stage two political studies subjects. AP206 is highly recommended. Students who have not passed this subject are advised to consult with the course convenor before enrolling
Assessment: continuous

Subject aims and description
By means of detailed case studies in Chinese foreign policy, this subject aims to develop and explore ways of interpreting and understanding the People's Republic of China's relationships with other countries since 1949. The focus is on countries within the Asian region, including Australia, and the United States. On the basis of some appreciation of the issues and problems in domestic politics, topics will include Maoist foreign policy, international relations, an examination of the value of cultural and technological exchanges with developed countries and China's current "open door" policy.

References
Klintworth, G., China's Modernisation: The Strategic Implications for the Asia-Pacific Region. Canberra: AGPS, 1989

AP312  Problems of Contemporary South-East Asia
No. of hours per week: three hours
Prerequisites: two stage two political studies subjects. AP104 Australia and South-East Asia is highly recommended
Assessment: class participation, a short seminar and a final paper of 3,000 words

Subject aims and description
This subject provides an understanding of the problems of countries in Australia's region, and the background from
which many of Australia's most recent immigrants have come. It is intended to develop students' capabilities for undertaking research on the background of contemporary issues, and for sifting facts out of the conflicting propaganda and reportage, and identifying possible courses of action. The present focus is on Vietnam, Cambodia and Laos. The subject also deals with the impact events in Indochina have had on Australia.

References

AP313 India — Uneven Development
No. of hours per week: three
Prerequisites: two stage two political studies subjects
Assessment: continuous

Subject aims and description
The course highlights the uneven character of development in India, relating it to the economic-political structure of Indian society. It explains why a country with an extensive and relatively advanced industrial base also suffers widespread poverty. The course deals with both the empirical and theoretical aspects of development in India. Topics include: 'green revolution' and class formation, land reform, agrarian relations, peasant conflict, industrialization, women in the labour force, caste and social status, and population and family planning.

References
Lakha, S. Capitalism and Class in Colonial India: The Case of Ahmedabad. New Delhi: Sterling, 1988

AP314 Work in Australia
No. of hours per week: three
Prerequisites: any two stage two political studies subjects, or equivalent. AP207 is recommended, but not compulsory
Assessment: essay, seminar paper and participation

Subject aims and description
This subject provides a historical and thematic approach to the study of work in Australia. The subject traces the evolution of blue collar and white collar occupations from the 1880s through to the Depression, the Second World War and the long boom. It looks at the formation of unions, professions, employer organisations, and the role of government in the shaping of the industrial relations system. It gives attention to the processes which have led to labour market inequalities on the grounds of gender, ethnicity and the state. The subject includes consideration of the methods and theories whereby sociologists produce knowledge about the social world.

AS101 Sociology 1B
No. of hours per week: four and a half hours
daytime or three hours per week evening
Prerequisite: AS100
Assessment: essays, exercises and examination

Subject aims and description
This subject provides an introduction to sociological ways of thinking about contemporary Australia. It examines changes and controversies in the modern family including marriage, divorce, the division of labour and violence in the family. It also considers issues associated with governments and markets, including spending and taxation, welfare and crime. Finally, the subject provides an introduction to data collection and analysis in social research.

AS204 Models of Sociological Analysis
No. of hours per week: three
Prerequisites: AS100 and AS101, and AS112 for students majoring in Australian Studies
Assessment: assignments and a test

Subject aims and description
No application of sociological techniques can be productive without an understanding of the theoretical issues which inform social explanation. This subject is designed to help students consolidate and extend their knowledge of social theory and to explore the ways in which social theory is useful in addressing practical issues in social policy and research.

This subject examines the most influential social theories, their sources in 19th Century thought and their influence on present-day social thinking. The works of Marx, Weber and Durkheim and contemporary writings which build on their ideas are discussed. Feminist and post-modern theories are also considered. Theories are examined for their core assumptions, ideological foundations and approaches to knowledge. Class discussions are designed to enable students to link these theoretical debates to current social issues and to practical strategies of social research.

References
AS205  Sociology of Deviance and Social Control
(This subject cannot be taken by students who have passed AS202 Sociology of Deviance)
No. of hours per week: three hours
Prerequisites: AS100 and AS101
Assessment: continuous

Subject aims and description
The study of deviant behaviour and social control raises questions about the nature of social order and the use of knowledge and power by some groups in society to reinforce their positions of dominance and control.

This subject deals with persons and actions defined as socially unacceptable and the attempts to control, reform or eliminate them. The first part of the subject examines the contributions a variety of sociological perspectives have made to the understanding of deviant behaviour and the social responses it evokes. Three main forms of control: the criminal justice system, the medical, psychiatric, or therapeutic system and the welfare system will be analysed in the second section of the course. Finally, the ways in which a sociological approach can inform policy and practice in a number of specific social problem areas such as child abuse, corporate crime, domestic violence and AIDS will be identified.

References

AS206  Sex and Gender in Society
No. of hours per week: three hours
Prerequisites: AS100 and either AS101 or AP112 for students majoring in Australian studies
Assessment: two essay, and a class test

Subject aims and description
This subject examines the ways in which the biological differences between men and women are socially structured to produce gender differences within and between societies. It analyses arguments about male-female differences and the ideological uses of these arguments.

All social institutions encode gender, but two in which gender is of central importance (family and work) are examined in detail. The ways in which these institutions are built on and, in turn, contribute to gender divisions in Australian society are studied.

Sexuality is considered in the context of its implications for social structures and the social meanings attached to heterosexuality and homosexuality.

The relationships between power, gender and sexuality are explored, including social and political power and sexual violence.

References

AS300  Urban Sociology
No. of hours per week: four hours daytime or three hours evening
Prerequisites: two stage two sociology subjects including AS204
Assessment: tests, class exercises, and an essay

Subject aims and description
This subject focuses on the relationship between urban theory and policy. A range of theoretical frameworks are used to provide an understanding of research and policy around issues of housing, inner-city redevelopment, suburban sprawl and spatial segregation. The role of the state and its relationship with the private sector in urban development is also examined.

Reference

AS302  Sociology of Organisations
No. of hours per week: three hours
Prerequisites: two stage two sociology subjects including AS204
Assessment: consists of two essays and a class paper

Subject aims and description
The twentieth century is the age of the large organisation. In particular, it is distinguished by the emergence of giant multi-divisional corporations, often impersonally-owned and bureaucratically-managed, and global in their operations. This subject examines first the key explanations and accounts of large organisational structures. It then considers contemporary lines of organisational analysis, including the organisational culture perspective, feminism, corporate power analysis, and post modernism. The subject includes analysis of organisations in the burgeoning East Asian nations, the massive problems faced by the giant corporations of earlier decades, and the emergence of new corporate forms in the late twentieth century.

Reference

AS303  Current Issues in Sociology
No. of hours per week: three hours
Prerequisites: two stage two sociology subjects including AS204
Assessment: continuous

Subject aims and description
The subject matter of AS303 changes on a year to year basis depending on what issues are considered relevant and interesting to students. Typical issues include environment, health and gender. Irrespective of the issue, key concepts and theories drawn from sociology will be used to inform students' understanding.

At present the focus is on the environment and population. The course analyses the effects of different forms of social organisation on the natural environment, concentrating on the degree to which environmental stress is caused by population growth and the degree to which it is caused by inappropriate use of resources.

The subject is organised on a seminar basis and emphasises student participation.

References
AS306 Methodology of Social Research
No. of hours per week: three hours
Prerequisites: two stage two sociology subjects including AS204
Assessment: continuous
Note: This subject must be taken by students completing a major in sociology

Subject aims and description
This subject is designed to provide an understanding of the range of methodologies that link sociological theory with social research practices, and to provide the opportunity for practical experience in research by using different methods and designs.
In this subject, we examine the relationship between theory, research design and policy. Students are introduced to a range of methods of data gathering, data analysis and presentation of results, using both quantitative and qualitative strategies. Each student will carry out a substantial piece of independent research under staff supervision.

References

AS307 Sociology and Social Policy
No. of hours per week: three hours
Prerequisites: two stage two sociology subjects including AS204
Assessment: continuous

Subject aims and description
This subject is designed to allow students to develop their understanding of the relationship between sociological research, theory and social policy.
Particular attention is given to the sociology of health and illness. The subject reviews the major theoretical and ideological approaches to social policy and introduces students to some of the key processes in healthy policy, e.g. problem identification, policy implementation, evaluation and monitoring.

References

AS308 Migration and Ethnicity
No. of hours per week: three hours
Prerequisites: two stage two sociology subjects including AS204 (or two sociology subjects and AP207 for students majoring in Australian studies)
Assessment: continuous

Subject aims and description
International migration pressures in Western societies are widespread and growing, as are tensions over settlement and integration. This subject will examine social and political factors shaping these processes with examples drawn from Australia, North America, France and Germany. It will analyse theories that attempt to explain the international movement of people and theories focused on the development of ethnicity. Particular attention will be paid to the position of migrant women.

References
Freeman, G. and Jupp, J. (eds.) Nations of Immigrants: Australia, the United States and International Migration. Melbourne: Oxford University Press, 1992

AS400 Urban Social Theory
Subject aims and description
This subject is designed to introduce students to the major theoretical perspectives used by social scientists to analyse urban development, to examine the nature of the urbanisation process and related urban problems, and to develop an understanding of the role of the State in urban society.

AS402 Urban Policy
Subject aims and description
This subject is concerned with an examination of national, state, and local policies that pertain to urban areas. Crucial issues covered include consideration of what constitutes urban problems and policies, the significance of ideology to policy, formulating policy, putting ideas into operation, evaluation and analysis of policy, and the significance of political structure. Particular topics such as housing, land-use, infra-structure will be used to exemplify issues, and experts in various policy areas participate in the course.

AS403 Research Report
Subject aims and description
This subject provides students with the opportunity to gain research experience by carrying out a research study under staff supervision and presenting the results of the study in the form of a report. The report is one of the major requirements of the graduate diploma course.

AS404 Advanced Urban Research
Subject aims and description
This subject offers more intensive first-hand training in research methods than that offered in AS411. Students undertake a group research program which involves taking a research issue through from conception to completion of a final report. The research program will involve students in survey, design, data collection, interviewing, coding, computing, and research analysis. For students undertaking an empirical analysis in their research projects or for students seeking employment as research officers, this subject provides necessary additional training in urban research.

AS411 Urban Research
Subject aims and description
This subject has three broad objectives: first, to introduce students to the range of subject areas and methodologies covered in contemporary urban research; secondly, to familiarise students with information sources for Australian urban research and methods of data acquisition; and thirdly, to develop a limited competence in basic research techniques. This involves introductory statistical procedures relevant to urban research, use of Swinburne’s computer facilities, and an introduction to the software packages for social research.
**AS413 Applied Social Planning**

**Subject aims and description**

In this subject the role of the social scientist in the social planning process is examined. While emphasizing the important role of the social scientist in critically examining the values and assumptions underpinning the planning process, this subject is predominantly skills oriented. Particular attention is paid to the techniques of needs surveys, evaluation, secondary data analysis, and social impact analysis.

**AS465 Urban and Regional Economics**

**Subject aims and description**

This subject is designed to introduce students to the principles of economic analysis as they apply to the city. Particular attention is given to techniques of the mechanics of economic analysis such as cost benefit analysis, program budgeting, investment analysis and demand forecasting. Topics to which these principles and techniques are applied include housing, transport, and local government.

**AT116 Linguistics 1**

No. of hours per week: three hours
Prerequisite: nil
Assessment: continuous

**Subject aims and description**

In this subject, basic linguistic concepts are introduced which are necessary to the understanding of the mechanics of language. The topics studied include sound systems of human speech, the combination of sounds into words, the rules for combining words into sentences, the study of meaning, the role of discourse, and language usage within a social system.

Although most of the examples are taken from the English language, their applicability to Japanese, Korean, Italian and other languages is also explained. Students undertaking foreign language majors are highly recommended to include this subject in their course. It is also available to students not studying languages.

**Textbook**


**AT117 Philosophy of Mind**

No. of hours per week: three hours
Prerequisite: nil
Assessment: continuous

This subject is offered as an elective for psychophysiology co-major students.

This subject introduces students to a range of philosophical issues associated with the study of mind, brain and cognition. It draws upon problems and issues arising from recent developments in computer technology, especially in artificial intelligence research, expert systems and neural nets, to show the contemporary relevance of many traditional approaches to the philosophy of mind, and to explore some of the new questions which have emerged from these advanced technologies.

**Textbooks**

Consult the lecturer in charge

**References**


**AT118 Aboriginal Issues**

No. of hours per week: three hours
Prerequisite: nil
Assessment: continuous

**Subject aims and description**

This subject is designed to allow examination of a wide range of contemporary Aboriginal issues. It is expected that students will become aware of the social and historical antecedents and recognise relationships that exist between them.

The central theme of the subject is the relationship between land and culture, from dispossession and demoralisation to the contemporary land rights movement as an attempt to re-establish a satisfactory cultural identity. Issues covered will include land rights, the search for identity, community development, health, employment, art and music.

**References**

To be advised

**AT119 Academic Communication Skills**

No. of hours per week: four hours
Prerequisite: nil
This subject is strongly recommended for all first year international students
Assessment: continuous, and will be based on classwork, a journal and essay

**Subject aims and description**

This subject is designed specifically for international students. It seeks to explicitly teach techniques in academic skills which aid in the transition to Australian tertiary academic life. The course incorporates classes in advanced reading, research techniques, essay writing, discussion skills analysis and criticism.

These skills are taught within a framework of English as a second language. It is taught through several themes which examine cultural issues and values in the Australian setting. As well it seeks to orient students to different disciplinary thinking by viewing these themes from different subject perspectives.

It incorporates guest lecturers, language support and a forum for problem solving for students new to the Australian academic expectations.

**References**

Swan, M. Practical English Usage. 22nd ed, Oxford University Press, 1991

**AT120 Writing Fiction**

No. of hours per week: three hours
Prerequisite: nil
Assessment: continuous

**Subject aims and description**

This subject will introduce students to the range of skills required of the professional writer of fiction. A series of workshop exercises will develop skills in creating character, dialogue and dramatic tension. Point of view, voice, form, style, plot, tone, and description and their place in building a story will be explored. The importance of revision, listening to criticism and developing a self-critical stance will be stressed, together with techniques for developing these personal skills.

An introduction to techniques of critical and creative thinking will be provided; e.g., plugging into both rational and irrational processes; the role of conjectural thinking, intuition and luck; the use of analogies, metaphor, and associative thinking; perceiving and creating relationships.

Emphasis is placed on the participant as writer and critic.
AT218  Archeology  No. of hours per week: three hours  Prerequisites: nil  Assessment: by essay, fieldwork diary and report

Subject aims and description
This subject introduces students to field techniques as a method of enquiry in archeology. Students will develop an understanding of the adaptability of human populations, theories of human evolution and development, and acquire insights into Australian race relations. The subject involves a five day field work program held during a non-teaching week. Students learn and practise a number of site survey techniques on a variety of sites. Direct contact with local Aboriginal communities is provided through cultural heritage officers. Lectures and tutorials are held for five weeks after the field trip and cover such topics as developments in Australian archaeology, contributions from the sciences, environmental issues, ethics and the Aboriginal view of archeology.

References

AV/103  Vietnamese 1A  No. of hours per week: six hours  Prerequisites: nil  Assessment: continuous

Subject aims and description
This subject aims to introduce the tone, essential syntax and the writing system of the Vietnamese language. It includes in content the nature of learning a foreign language; an introduction to the Vietnamese language; the tones of the Vietnamese language; the use of kinship terms, particles and "articles"; greetings; the individual; family and time. By working through a series of graded and contextualised dialogues students will begin to develop reading, writing, listening and speaking skills. This subject includes in content the usage of some postverbs, dimensions and expressions of distance, comparisons, directions and modes of transport, the human body and health terms.

Textbooks
Thompson, L. Vietnamese Grammar: Hawaii: University of Hawaii Press, 198415
Vuong, G.T. Vietnamese in a Nutshell. New Jersey: Montclair, 1975

References
Ton-That, Q.D. Beginner Vietnamese Book 2. Monash University, 1993
Other materials will be provided by the lecturer

AV/104  Vietnamese 1B  No. of hours per week: six hours  Prerequisite: AV/103 or approved equivalent  Assessment: continuous

Subject aims and description
This subject is a continuation of AV/103. Focus will be on the question of tense, usage of conjunctions and more complex particles. The teaching method is based on class work. By working through a series of graded and contextualised dialogues students will develop reading, writing, listening and speaking skills. This subject includes in content the usage of some important preverbs and postverbs, dimensions and expressions of distance, comparisons, directions and modes of transport, the human body and health terms.

Textbooks
Thompson, L. Vietnamese Grammar: Hawaii: University of Hawaii Press, 198415
Vuong, G.T. Vietnamese in a Nutshell. New Jersey: Montclair, 1975

References
Ton-That, Q.D. Beginner Vietnamese Book 2. Monash University, 1993
Other materials will be provided by the lecturer
AV204 Vietnamese 2B
No. of hours per week: six hours
Prerequisite: AV203 or approved equivalent
Assessment: continuous

Subject aims and description
This subject aims to continue to develop skills in written and spoken Vietnamese. The focus will be on communicative active oral and written skills for a wide range of contexts. Topics covered will include contemporary issues directly relevant to the Vietnamese community of Australia, such as health, education, the law and immigration.

Students will read and analyse texts to introduce new structures and vocabulary. For the listening and speaking sections, the emphasis is on the active production of the language to promote active recall of vocabulary items and their usage in the appropriate context using the correct grammatical forms in accordance with accepted conversational conventions.

The teaching method is based on class work. By working through a series of graded and contextualised dialogues students will further develop reading, writing, listening and speaking skills. In addition, students will be required to participate in group discussions on topics selected by the lecturer.

Textbooks
Thompson, L. Vietnamese Grammar. Hawaii: University of Hawaii Press, 1984
Vuong, G.T. Vietnamese in a Nutshell. New Jersey: Montclair, 1975

AV304 Vietnamese 3B
(Not offered in 1994)
No. of hours per week: six hours
Prerequisite: AV203 or approved equivalent
Assessment: continuous

Subject aims and description
This subject aims to continue to develop skills in written and spoken Vietnamese. The focus will be on communicative active oral and written skills for a wide range of contexts. An outline of the development of modern Vietnamese literary tradition will be given. Topics covered will cover areas of the arts, literature and history. Time will be devoted to the discussion of the social background to the emergence of the romanised system of writing, its role as a vehicle for social change, the influence of the Western tradition of thought and the role of the Tu Luc Van Doan group of writers.

The teaching method is based on class work. By working through a series of graded and contextualised dialogues students will further develop reading, writing, listening and speaking skills. In addition, students will be required to participate in group discussions on topics selected by the lecturer.

Textbooks
Thompson, L. Vietnamese Grammar. Hawaii: University of Hawaii Press, 1984
Vuong, G.T. Vietnamese in a Nutshell. New Jersey: Montclair, 1975
References

Dang, C.L. and Le, KK. Tu Dien Viet-Anh (Vietnamese-English Dictionary). Nha Xuat Ban Khoa Hoa Ho-Ha Noi, 1990

In addition videotaped materials and texts selected by the lecturer will be provided.

AV306 Reading Vietnamese Newspapers
(Not offered in 1994)
No. of hours per week: four hours
Prerequisite: AV204 or approved equivalent
Assessment: continuous

Subject aims and description
This subject aims to provide further training in reading skills to enable students to deal with contemporary and original Vietnamese texts on their own. Selected texts, contemporary in nature and diverse in topic, will form the basis for the required reading for this subject.

Textbooks
A Selection of Contemporary Reading Texts (in preparation)

References
Dang, C.L. and Le, KK. Tu Dien Viet-Anh (Vietnamese-English Dictionary). Nha Xuat Ban Khoa Hoa Ho-Ha Noi, 1990

AY100 Psychology 100
No. of hours per week: four hours daytime or three and a half hours evening
Prerequisites: nil
Assessment: practical exercises (including participation as a subject in research), a practical report and an examination

Subject aims and description
AY100 and AY101 are designed to introduce students to the content and method of psychology. Topics introduced in AY100 include psychology as a science, biological foundations of behaviour, sensation, perception and consciousness, motivation, learning and experimental design and analysis.

Preliminary reading
Students wishing to familiarise themselves with concepts in psychology could read any recent introductory psychology text available from most regional libraries.

Textbook
Details will be provided in the first lecture in AY100

AY101 Psychology 101
No. of hours per week: four hours daytime or three and a half hours evening
Prerequisite: AY100
Assessment: an essay, a practical report (including participation as a subject in research) and an examination

Subject aims and description
This subject concentrates on various aspects of cognition such as memory, information processing, intelligence and problem solving. Other topics covered include emotion, motivation, genetics, personality, sexuality, stress and coping and psychopathology. The design and analysis of experimental studies forms a major part of the teaching program.

*AY202 Cognition and Human Performance
No. of hours per week: four hours
Prerequisites: AY100, AY101, SM278
Assessment: project work, laboratory exercises and an examination

Subject aims and description
This subject examines major theories of cognitive functioning and the mechanisms and processes involved in memory, attention and human performance. It will provide a basis for the understanding of skill acquisition and examine the effects of motivation, overload and arousal levels on performance. After a general introduction to theory, contemporary issues are considered, including decision-making, perceptual-motor performance and clinical and organisational applications.

Textbooks

* Not available to students who have previously passed AY313 Cognition and Human Performance.

*AY203 Developmental Psychology
No. of hours per week: four hours daytime or three and a half hours evening
Prerequisites: AY100 and AY101
Prerequisite or corequisite: SM278
Assessment: a practical report, an essay, and an examination

Subject aims and description
This subject focuses on development and maturation in the early periods of life from infancy and childhood through to adolescence.

The emphasis is on social, emotional, cognitive and intellectual development with a comprehensive experiential and experimental program supporting the theoretical material.

The teaching program consists of two lectures, a practical session and a tutorial class per week.

Reference

* Not available to students who have previously passed AY200 Psychology 200.

*AY204 Social Psychology
No. of hours per week: three hours
Prerequisites: AY100, AY101, SM278
Assessment: a practical report, an essay, and an examination

Subject aims and description
This subject involves the scientific study of the personal and situational factors that influence individuals’ behaviour in social situations. The aim is to introduce students to the key conceptual and theoretical models in social psychology and to develop an appreciation of how our behaviour is affected by the presence or awareness of others.

The teaching program involves two lectures, a tutorial/practical session and an average of one hour of project work per week.

Reference

* Not available to students who have previously passed AY201 Psychology 201.
AY312  The Psychology of Personality
No. of hours per week: three hours
Prerequisites: AY202, AY203, AY204, SM278
Subject aims and description
This subject focuses on the behaviour and experience of the individual as a whole person. Attention is given to contributions from other specialised fields of psychology, especially development, social interaction, learning, motivation, cognition, emotion. Theory and research from these fields are considered specifically from the viewpoint of integrating such contributions to increase our understanding of ourselves and others as persons.

Four major perspectives on personality are examined: psychodynamic, dispositional, cognitive/behavioural, phenomenological. Issues such as methods of personality assessment and research strategies are considered. Selected contemporary issues are examined, including: conflict and defence; the self; self-regulation; purpose and meaning; the effective personality, personality disorders.

References

*AY319 Psychological Measurement
Equivalent value of one half semester subject
No. of hours per week: two hours
Prerequisites: AY312, SM378
Subject aims and description
In this subject, students will be involved with the practical aspects of psychometrics: design, construction, validation and evaluation of assessment techniques. The aim of this unit is to help students to develop a greater appreciation of the psychological and measurement foundations of tests and other assessment procedures.

Approximately the first hour of most of the two hour sessions will be devoted to information input and the latter hour to laboratory exercises.

Reference

* Not available to students who have previously passed AY311 Methods and Measures.

*AY320 Psychological Foundations of Counselling
Equivalent value of one half semester subject
No. of hours per week: two hours
Prerequisite: AY312
Subject aims and description
The nature of counselling and its relationship to guidance, psychotherapy and other helping activities is considered. The basic helping interview skills are introduced, drawing upon the microcounselling model proposed by Ivey. Video-assisted practice interviews are an important in-class activity. Models of counselling, such as that proposed by Egan, are discussed. Concepts from developmental psychology, social psychology and cognitive psychology related to counselling are considered. The evidence concerning the effectiveness of counselling intervention is examined.

References
Thomas, R. Counselling and Lifespan Development London: Sage, 1990

* Not available to students who have previously passed AY314 Counselling and Interviewing.

AY400 Applied Social Psychology
No. of hours per week: one hour (lecture); two hours (seminar)
Assessment: research essay 50%, examination 50%
Subject aims and description
This subject provides a conceptual framework for understanding multivariate analysis and interpretation of psychological data, and an opportunity to become familiar with the use of a range of multivariate techniques. These include analysis of variance and covariance, multiple and logistic regression techniques, cluster and discriminant regression techniques, cluster and discriminant analysis, structural equation modelling.

Students are taught SPSS/PC+ and SPSS-X, social science computer packages.

References

AY401 Research Design and Analysis
No. of hours per week: one and a half hours (lectures); one and a half hours (seminar)
Assessment: practical report 50%, examination 50%

AY403 Advanced Quantitative Methods
No. of hours per week: one and a half hours (lectures); one and a half hours (seminar)
Assessment: practical report 50%, workbook 50%

Subject aims and description
This subject provides a conceptual framework for understanding multivariate analysis and interpretation of psychological data, and an opportunity to become familiar with the use of a range of multivariate techniques. These include analysis of variance and covariance, multiple and logistic regression techniques, cluster and discriminant regression techniques, cluster and discriminant analysis, structural equation modelling.

Students are taught SPSS/PC+ and SPSS-X, social science computer packages.

References
AY411 Counselling in the Human Services

No. of hours per week: one hour (lectures), two hours (laboratory)
Prerequisite: AY405
Assessment: theory examination 50%, practical assignment 50%

Subject aims and description
Contemporary theory, research and practice in counselling psychology.
Models of training in counselling and interviewing.
Models of supervision in counselling psychology.
Counselling service delivery systems.
Evaluating and monitoring counselling service programs.
Contemporary theory and practice in small group psychology; group facilitation skills.

References

AY413 Research Project and Report

Independent research under supervision
Prerequisites: AY401 and AY414
Assessment: submission of a report (4,000-6,000 words), assessed by two examiners

Subject aims and description
Each student is required to formulate individually an empirical research question, design an appropriate study, collect and analyse data, interpret these data in relation to the original research question, and submit a report on the investigation in the form of a journal report.
The research project may take any one of a number of forms: controlled observations, case studies, field surveys, laboratory experiments, field experiments, secondary analysis of data sets, archival research. The individual student must plan and carry out every phase of the project from initial planning to final analysis, interpretation and reporting of the data.

While flexibility in methodology is clearly required, given the diversity of potential topics for investigation, the methodology and data analysis procedures used must be (a) generally recognised within the field of psychological research as sound and appropriate for the particular question, and (b) correctly implemented in a systematic manner.

A member of the Rychology Department will be assigned to supervise the research. Supervisor and student will be expected to meet regularly for consultation according to a mutually agreed timetable.

The conduct of the research overall must conform in all respects to the principles of research ethics stated in the Psychology Department's Statement of Research Ethics.

References
Australian Psychological Society 21st Annual Report. 1986
Psychology Department. Statement on Research Ethics. Melbourne: Swinburne Press. 1986

AY420 Assessing Persons and Environments

No. of hours per week: two hours
Assessment: case study and assessment report

Subject aims and description
This subject aims to equip students with the knowledge and skills required to carry out limited psychological assessments of individuals in human services and human resources settings under appropriate professional supervision.
Topics covered in the course include:

- history of psychological assessment, ethical issues in the use of psychological tests;
- assessment as a decision making process; base rates, outcome expectancies, prediction, risk assessment;
- the foundations of assessment, reliability, validity, utility (normative comparison);
- eliciting information by means of interviews;
- assessing abilities and aptitudes;
- assessing interests;
- conceptualising and assessing personality;
- reporting assessments;
- selected special issues, including career assessment.

References

AY422 Ethical and Professional Issues

No. of hours per week: one hour (lectures), one hour (seminarklass exercises)
Assessment: required attendance and participation in a minimum of 75% of the class meetings. May include seminar presentation and paper, essay, and/or a class test

Subject aims and description
Topics will be selected from the following list:
- Psychology as a profession: The Australian Psychological Society and requirements for registration in the State of Victoria.
- Confidentiality, report writing and supervision.
- Philosophical and professional issues: morality and ethics: professional problems.
- Psychology and the media.
- Psychology and the law: mental health legislation, forensic psychology, and the psychologist as expert witness.

References

AY426 Special Application

Prerequisite: AY411
Fieldwork placement
Assessment: satisfactory completion of the fieldwork program. Submission of a report on the assignments and activities

Subject aims and description
Students will be encouraged to undertake a period of approved practical work in a Psychological Services Unit under the direct supervision of a professional psychologist. This work will normally involve areas of applied psychology.
such as personnel selection, occupational health and safety, test construction and development, counselling services, educational research. Students intending to undertake such a program will be required to prepare a detailed proposal which must be jointly agreed upon by the supervising psychologist and the member of the Psychology Department assigned to monitor the fieldwork placement. The program will involve assigned reading, regular consultation between the student and the supervisor and the co-ordinator, the keeping of a work diary by the student, and the submission of a report of 3,000 words on the placement and the issues of practice highlighted by the placement. A minimum of fifty hours must be spent in the field.

References
Australian Psychological Society, Standards of Professional Practice for Psychologists, Melbourne: Australian Psychological Society, 1985

AY503 Research Colloquium
No. of hours per week: two hours
Prerequisite: AY510
Assessment: presentation of a research proposal 50%, submission of literature review 50%

Subject aims and description
This subject is designed to extend students' appreciation of developments in research related to counselling psychology. Brief presentations by students in the program concerning their proposed individual research projects. Presentations by Departmental staff and visiting researchers and practitioners concerning current research in the field. Examination of selected examples of published research which constitute exemplars of approaches to researching theoretical or practice issues in counselling psychology.

References
Heinemann, A.W. and Shontz, F. Methods of Studying Persons. The Counselling Psychologist, 13, 111-125, 1985

AY510 Human Services Research and Evaluation
No. of hours per week: three hours
Assessment: individual research assignment (100%)

Subject aims and description
This course will build upon knowledge and skills acquired during undergraduate study in areas such as research design and statistical analysis. The aim will be to equip graduates to design, conduct and report applications of psychological research methodologies in human services settings. Review of foundation topics in research design and analysis. Research design in field settings. Measurement in human services research. Qualitative research methodologies. Action research and intervention. Single-case methodologies. Models of program evaluation. Program evaluation methods. Program monitoring and performance indicators. Evaluation in practice. Computer applications in human services research.

Computer data analysis — advanced procedures.

References

AY511 Group Counselling Skills
No. of hours per week: three hours
Assessment: demonstration of an acceptable level of skill in conducting group-based activities 100%

Subject aims and description
This subject is designed to provide students with the knowledge, skills, and self-awareness necessary to use group-based interventions. There will be didactic input, experiential learning, and practice of skills with feedback.

Applications of groups in counselling psychology practice, types of groups. Foundation concepts in group-work; structure, content, process, roles. Theories of helping-group functioning. Interpersonal relationships in groups, group leadership, leadership skills: modelling, teaching process-commentary, managing hostility and aggression. Interventions to promote learning, interventions to enhance group processes: selected techniques in group-work: warm ups, introductions, motivators, role-plays, de-briefing, sharing, terminating.

References

AY512 Counselling Theory and Skills
No. of hours per week: three hours
Assessment: practical examination involving the demonstration of an adequate skill level in conducting and appraising a counselling interview (100%)

Subject aims and description
This subject is intended first to consolidate students' counselling-related knowledge and skills acquired during undergraduate study. The second aim is to develop a high level of skill in those help-intended communication behaviours seen as fundamental to effective interpersonal helping. The third aim is to develop a basic level of competence in selected intervention techniques used frequently by counselling psychologists.

AY514 Development and Adaptation

No. of hours per week: three hours
Assessment: seminar paper 40%, examination 60%

Subject aims and description
Introduction to life span development theory: analysis of meta theories. Theoretical models derived from the above metaphors, e.g. Havihurst, Erikson, Piaget, Levinson and others.
The notion of life transitions and their links to the experience of stress and coping.
An illustrative model for analysing human adaptation to life transitions: Scholsberg.
Problems and issues in conceptualizing and measuring development and adaptation to life events:
Applications of the above theoretical models and models to specific life events and transitions including: identity and intimacy issues in adolescence and young adulthood;
developmental problems confronting men and women in mid-life and later adulthood; crises of development such as substance abuse; stress related illness and relationship breakdown.

References
Peterson, C. Looking Forward through the Life Span. 2nd ed. New York: Prentice Hall, 1989

AY515 Psychological Assessment

No. of hours per week: three hours
Assessment: practical examination involving the use, interpretation, and reporting of selected assessment procedures (100%)

Subject aims and description
This subject builds upon knowledge of psychometrics gained from undergraduate study and is intended to equip graduates with skills in a selection of psychological assessment procedures.
A review of the foundations of psychological assessment.
Topics covered may include: reliability, validity.
Procedures for establishing and improving the reliability and validity of assessment procedures.
Cognitive and behavioural assessment; Adaptive Behaviour scales.
Assessing occupational interests and references: The Holland VPI and SDS, the W.A.P.S.
Assessing abilities: including the use of WISC-R and WAIS-R.
Self-report and projective measures of personality functioning.
Conceptualising client and social system dynamics.
Reporting psychological assessments.

References

AY516 Counselling Applications

No. of hours per week: three hours
Assessment: practical examination involving case-studies (100%)

Subject aims and description
This subject follows on from Counselling Theory and Skills. It aims to introduce students, in a workshop context, to important topics in counselling psychology practice in preparation for students' supervised practica and subsequent independent practice.
Application of counselling techniques to selected client problems: e.g. depression, anxiety, anger, interpersonal skill deficits, decision-making, crisis counselling, substance abuse, post-traumatic stress, rehabilitation, marital and family conflict, child abuse.
Other issues that may be covered include:
- cross cultural issues in counselling;
- special issues in client assessment: level of risk of suicidal or violent behaviour, physical illness; DSM-III-R;
- record-keeping and referral;
- supervision: models of supervision, supervision skills;
- consultation;
- community based interventions.

References

AY517 First Supervised Practicum (Internship A)
Prerequisites: AY512, AY515
Assessment: students will be evaluated by the supervisor(s) most directly associated with their work together with the coordinator. Performance will be reviewed mid-way through the internship and an evaluation made at the end

Subject aims and description
This first practicum is concerned primarily with helping students to make the transition from the counselling laboratory to the counselling practice setting. Initially, new students will be allocated clients at the Swinburne Centre for Psychological Services. In addition, students will participate in the administration of the Centre and in dealing with telephone enquiries to the Centre.
Case Work: Students will be allocated clients in accordance with their own existing levels of counselling skills and their
professional skills and their professional interests. A normal case-load would be 3 clients per week. Students will be expected to see a mixture of child, adolescent and adult clients and to gather experience in working with groups and families as well as individuals. A supervisor will be appointed for each client or family seen by the student and will meet weekly with the student for supervision. The supervisor will be an Associate of the Centre.

Case Reporting: Students will meet once a month in a small group supervision session to discuss their clients. Each student will be required to present a report on a case for discussion by the group. In addition, each student will write a comprehensive case summary after termination with each client.

AY610 Professional and Ethical Issues
No. of hours per week: three hours
Assessment: research essay 25%, practical examination based on case-studies 75%

Subject aims and description
This course is designed to ensure that students understand the ethical and legal responsibilities of psychologists working in the human services. Through study of the ethical standards of the profession, and legal issues related to the practice of psychology, students will learn about the process of ethical and professional decision making.

Topics covered will be chosen from: psychology as a profession; the Australian Psychological Society; the APS Code: the Psychologist's Registration Act. Confidentiality; ethical and professional issues in assessment; Supervision: psychologists and the media. Values and ethics in psychotherapy. Professional competence and weakness; quality assurance. Dual-role relationships and conflicts of interest; the public image of psychology. Ethical issues in a private practice; fee charging.

Psychologists as expert witnesses; the child witness.

References

AY611 Counselling Psychology B: Psychology of Marriage and the Family, Educational Counselling
No. of hours per week: three hours
Assessment: seminar presentation 50%, videotaped interview 50%

Subject aims and description
The course is designed to:
- examine contemporary theory concerning the role and function of the Australian family and its interaction with the wider society;
- introduce students to theory and practice of systems approaches to family therapy;
- increase students' understanding of the impact and significance of educational services in various settings.

Introduction to the study of the family. Definitions of family, variations in Australian family structures. Family formation, functions and the family life-cycle.
Family therapy and the major schools: structural, strategic, systemic.
Contributions of significant family therapists
Generational and cross-cultural issues in family therapy.
Measurement of family interactions.
The influence of schools of psychological development, with emphasis on social cognitive development. Problems of school failure or of poor adjustment to school and further education.

References
Nichols, M.P. and Schwartz, R.C. Family Therapy. 2nd ed, Boston: Allyn and Bacon, 1991

AY612 Second Supervised Practicum — Internship B
Prerequisite: AY517
Duration: two semesters
Assessment: students will be evaluated by the supervisor(s) most directly associated with their work together with the co-ordinator. Performance will be reviewed mid-way through the internship and an evaluation made at the end.

Subject aims and description
This second practicum is intended to broaden and consolidate students' previous learning in the program and to provide students with the opportunity to act as a responsible professional within a counselling setting.

Case Work: Students will be allocated to an internship in one or two settings over the year. Allocation to an internship setting will be guided both by the student's professional interests and the objective of extending his or her existing skills. Students will take on counselling clients and participate as fully as possible in the professional activities of the internship setting. The Psychology Department has links with numerous practice settings in which experienced psychologists work, including organisations such as the Vietnam Veterans Counselling Service, the Banking Staff Counselling Staff Service; University and TAFE institution counselling units; Moreland Hall Drug and Alcohol Service; Doncare Community Counselling Services; and the Marriage Guidance Council of Victoria.

Case Reports: Students will be required to have presented written and/or verbal case reports about their clients to other professionals.

Organisational Project: Where appropriate students are encouraged to participate in an assessment or review of some aspect of service delivery or administration of the internship setting.

AY613 Counselling Psychology A: Psychology of Work and Health Psychology
No. of hours per week: three hours
Assessment: applied project 50%, class test 50%

Subject aims and description
This course is designed to develop an understanding of counselling practice related to health, well-being and behaviour with particular reference to the person/organisation interface and organisational settings. Specific topics will include:
Psychology of Work
Organisational theory
Career choice, development and change
Vocational guidance and career counselling
Personnel selection, induction, training, socialisation and appraisal
Leadership and supervision
Communication
Industrial relations, negotiations, change and conflict resolution
Health Psychology
The biopsychosocial perspective of health and wellness.
Stress, illness and psychological health; stress and its management.
Lifestyle effects on health and wellbeing.
Personal, work related and community related health problems.
Occupational health and safety.
Ergonomics and person/machine interaction.
Future developments.

References
Sheridan, C.L. and Radmacher, S.A. Health Psychology: Challenging the Biomedical Model. New York: John Miles & Sons, 1992

AY614 Aspects of Professional Practice
No. of hours per week: two hours
Prerequisite or corerequisite: AY612 Supervised Practicum — Internship B
Assessment: seminar presentation and essay

Subject aims and description
The aim of the subject is to consolidate the knowledge and skills gained by students during their supervised practica in order to assist the transfer of this knowledge and skill to psychological practice after graduation.
A series of topics will be covered in seminar format. They will cover areas such as:
- assessment and containment of risk;
- managing therapeutic impasses and dealing with client resistance;
- termination and relapse prevention;
- working in multidisciplinary teams — appreciating other professions;
- supervising and being supervised;
- consultation skills;
- ongoing professional development;
- communication and public relations;
- psychology and contemporary social issues;
- intercultural and minority group issues.

Reference

AY615 Supervised Research Project and Report

Subject aims and description
This subject is designed to (a) enhance students' awareness of the importance of a scientific research-base for counselling psychology, (b) to consolidate students' practical understanding of research methodology related to counselling psychology and (c) to contribute to the research program of the Department.
Students will be assigned a supervisor in the first year of their enrolment. At the end of this first year of enrolment each student must submit a written, detailed research proposal.
At the end of the second year of enrolment students must submit a 4,000 word review of the relevant background literature. This must be in a form similar to that of a review article appearing in one of the major journals which publish review articles related to topics in counselling psychology (e.g. Journal of Counselling Psychology, Counsellor Education and Supervision, British Journal of Guidance and Counselling).
At the end of the fourth year of enrolment each student must submit a report on his or her research in the form of a 4-5,000 word article in a form suitable for submission to a nominated journal which publishes empirical research related to counselling psychology. This report must be accompanied by a Technical Supplement containing detailed results, raw data, and copies of measures used.

References

BE110 Microeconomics
No. of hours per week: three hours
Prerequisites: nil
Assessment: examination/assignment

Subject aims and description
To introduce key microeconomic concepts and to encourage and assist students to apply economic reasoning to issues facing business, government and consumers.
This unit introduces students to microeconomic concepts and their application within the framework of the Australian economic and business environment. The subject commences with an examination of the role of the contemporary market system in allocating resources and distributing output. This is followed by an examination of the firm's production, costs and revenues in a variety of market situations. The significance of microeconomic concepts, issues and policies is emphasised throughout the unit.

Textbooks

References

BE220 Macroeconomics
No. of hours per week: three hours
Prerequisite: BE110
Assessment: examination/assignment, multiple choice tests

Subject aims and description
To provide business students with an understanding and appreciation of macroeconomic concepts, issues and policies pertaining to the Australian economy.
This unit introduces students to key macroeconomic concepts, issues and policies. It is descriptive in nature and emphasis is placed on current issues and policies. To fully appreciate the current Australian economic and business environment, some theoretical background is necessary and
this is provided in the course by the AD/AS model. This model is applied to issues such as inflation, unemployment and external imbalance and used to demonstrate the impact of government macroeconomic policies (wages, fiscal and monetary) on Australian business and the economy. Within the course students are introduced to the financial markets, financial deregulation and Australia's international business environment.

**Textbook**

**References**

**BE221 Managerial Economics**
No. of hours per week: three hours
Prerequisite: BE110 (SM147 or SM148 desirable but not mandatory)
Assessment: by assignments and examination

Students who are contemplating major studies in economics should include this unit and **BE222 Industry and Government** in their course.

**Subject aims and description**
This unit shows how economic analysis can be used to assist business decision-making. Case studies are used to illustrate the concepts involved. The unit deals with these topics: demand analysis (including empirical demand studies and forecasting); cost estimation and forecasting; profit and alternative goals of firms.

**References**

**BE222 Industry and Government**
No. of hours per week: three hours
Prerequisite: BE110
Assessment: by assignments and examination

Students who are contemplating major studies in economics should include this unit and **BE221 Managerial Economic Analysis** in their courses.

**Subject aims and description**
The unit deals with the performance of industry in contemporary economies with special reference to Australia and considers the role of government in these economies. Performance criteria, the nature of the modern corporation (including transnational corporations) and specific approaches to industrial policy and regulation are discussed.

**Textbook**
To be advised

**References**

**BE223 Industrial Relations**
No. of hours per week: three hours
Prerequisite: BE110
Assessment: by assignments and examination

**Subject aims and description**
This unit aims to equip students with an understanding of the Australian industrial relations systems, with particular emphasis on the Federal and Victorian jurisdictions. As well as providing a theoretical framework within which the industrial relations systems operate, the unit will address a range of contemporary issues including current Federal and State legislative provisions, labour market reforms, trade union issues and the role of management in industrial relations.

Topics to be studied within the unit include:
- industrial conflict
- the role of the parties — unions, employers, government
- Federal and State arbitral systems
- wage determination
- management and industrial relations

Specific references will be provided at the beginning of the unit, however, the following references will provide useful preliminary reading.

**References**

**BE224 Economic Evaluation**
No. of hours per week: three hours
Prerequisites: BE110
Assessment: by assignments and examination

**Subject aims and description**
This unit provides students with a sound grasp of basic concepts and techniques of economic evaluation for application in areas such as: a review of the effectiveness of budgetary programs, evaluation of major construction projects and capital equipment acquisition, and cost-effectiveness studies. Emphasis in the unit is on the development of interpretive skills, through awareness and knowledge of important factors entering into the evaluation process and an appreciation of the elements of uncertain and imprecise information.

**Textbooks**

**BE225 Economic Techniques for Business**
No. of hours per week: three hours
Prerequisites: BE110, BQ110 or BQ111 (or an approved equivalent)
Assessment: by assignments and examination

**Subject aims and description**
The aim of this unit is to equip students with the techniques and skills generally used in economic and market research in business. The course will cover a wide variety of techniques with an emphasis on analyses and interpretation of information rather than underlying mathematical theory.

Topics include:
- statistical computing
- data analysis
- statistical analysis
Subject aims and description

The main objectives of the unit are to:

- broaden students' understanding and appreciation of macro-economic principles, current issues and policy
- provide students with the necessary skills to evaluate macro-economic policies.

Specific topics include the measurement of macroeconomic performance, limitations of major aggregate indicators, sources of fluctuations in economic activity, major macroeconomic problems, macroeconomic management within an open economy.

The subject describes the deficiencies in earlier macroeconomic theories which led to disaffection. But the theories now in vogue and the policies based upon them have their own limitations which will be explained.

References


BE332 Economic Research

No. of hours per week: three hours
Prerequisites: BE110 and BE220
Assessment: by assignments and examination

Subject aims and description

The intention in this unit is to broaden students' familiarity with the nature and scope of research undertaken in economics and to increase students' ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References

There is no single prescribed reference for this course, but extensive use is made of current journal articles

BE333 Financial Institutions and Monetary Policy

No. of hours per week: three hours
Prerequisites: BE110 and BE220
Assessment: by assignments and examination

Subject aims and description

This subject aims to provide students with:

- an up-to-date view of Australian financial intermediaries; their nature and operation in a changing business environment;
- an appreciation and understanding of the application of monetary policy; its origins and current controversies.

This course includes:

- a study of Australian financial intermediaries;
- the process of deregulation and its impact on financial intermediaries and Reserve Bank policies;
- the role of the Reserve Bank as a prudential supervisor and as a regulator of economic instability;
- the development of monetary policy, current monetary policy controversies and the application and operation of monetary policy.

Textbooks

To be advised

BE309 Monetary Course Booklet, 1993

References


The Reserve Bank Bulletin — recent issues

BE334 International Trade

No. of hours per week: three hours
Prerequisites: BE110 and BE220
Assessment: by assignments and examination

Subject aims and description

This subject aims to encourage students to recognise the importance of international trade to the Australian economy and to equip students to appreciate and evaluate the ways in
which government and business can improve Australia's international trade performance.
The subject combines an examination of the nature of economic theory relating to international trade, trade restrictions and industry policy, with discussion of key international trade issues of importance to the Australian business community and government.

Topics covered are included in the following list:

International trade and the Australian economy
- balance of payments
- composition and direction of trade
- Australia's place in world trade.

The economics of trade and trade restrictions
- basis of trade and gains from trade
- explanations of trade patterns
- trade restrictions — nature, reasons, and effects
- regional trading blocs.

Improving Australia's international competitiveness
- industry policy issues (e.g. level playing field debate, micro-economic reform)
- the business perspective — obstacles, and strategies for success
- the role of government.

References

BE335 International Finance
No. of hours per week: three hours
Prerequisites: BE110 and BE220
Assessment: by assignment, test, examination and essay

Subject aims and description
The intention in this unit is to provide students with the theoretical and analytical skills necessary for the understanding and evaluation of international financial issues which are of importance to the Australian business community and government.

Topics covered are included in the following list:

- The international financial environment
- Australia's external position
- Exchange rate theories and systems
- The operation of foreign exchange markets
- The international financial system
- International banking
- International Regulation

This course is particularly relevant for students who may work in areas which have international financial or trade dealings.

References

BE336 Economics of Social Issues
No. of hours per week: three hours
Prerequisites: BE110 and BE220
Assessment: by assignment, test, essay and examination

Subject aims and description
This subject examines both the uses and limitations of orthodox economic theory in understanding many of the important social, economic and political issues that are current in Australia today. In so doing the course will further students' understanding of the roles of both business and government in furthering society's objectives.

Issues considered will be drawn from: the distribution of income, wealth and poverty, the incidence of unemployment, and the roles of private enterprise and government in the provision of health-care, education, transport, energy and environmental protection.

The unit endeavours to teach students the theory and principles needed to be able to analyse social issues from an economic perspective.

Textbook
Because of the contemporary nature of the unit no textbook is set. Comprehensive reference lists will be provided

BE337 Economic Development
This unit will not be offered in 1994.

BE338 Comparative Labour Relations
This unit will not be offered in 1994.

BE339 Comparative Economic Systems
This unit will not be offered in 1994.

SC173 Biology
No. of hours per week: four hours (two hours of lectures and two hours of practical work)
A first year subject offered by the Department of Applied Chemistry for students enrolled in the Bachelor of Arts program.

Subject aims and description
Cell structure and function.


Basic microbiology: elements of microbial world ranging from viruses, rickettsia, bacteria, algae, protozoa and fungi. Methods of growing, isolating and handling microorganisms. Microbes and pathogenicity.


Practical work reinforces the theory.
SC174  Biology
No. of hours per week: six hours
A second semester subject offered for first year students enrolled in the Bachelor of Arts program.

Subject aims and description
The subject introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialised functions and then proceeds to treat the following systems in some detail.
Cardiovascular system: properties of blood; anatomy and physiology of the heart. Mechanical and electrical events of the cardiac cycle; cardiac output. Regulation of heart rate and blood pressure, haemostasis.
Respiratory system: anatomy of the respiratory system; gas exchange and transport; control of respiration. The properties of haemoglobin.
Digestive system: the arrangement and functions of the digestive system
Skeletal system: calcium regulation, structure of bone.
Muscular system: types of muscle and their roles. Mechanism of contraction. Conduction in the heart.
Immune systems: reticulo-endothelial system. Inflammation, phagocytosis; lymphocytes, cell-mediated immunity, antibody-mediated immunity.
Nervous system: nerves and excitability; transmission, the synapse; simple reflex arc. Overview of functions and structures in the central nervous system.
Endocrine system: functions. major glands, their products and functions.
Reproductive system: anatomy, gametogenesis, contraception, pregnancy.
Integration of body systems: responses to stresses such as exercise, shock.
Practical work in the course includes use of the microscope in the examination of cells and tissues, the testing of body parameters and physiological functions using charts, biological models and equipment.

SM278  Design and Measurement 2A
No. of hours per week: four hours daytime or three and a half hours evening
Prerequisites: AY100 and AY101
Assessment: continuous

Subject aims and description
A stage two, first-semester subject in research design and statistical analysis is planned to complement concurrent and future studies in psychology.
In this subject the emphasis is on understanding the methodology of basic research design and how the associated statistical analysis can provide answers to research questions. Students also receive instruction in the use of the Statistical Package for the Social Sciences (SPSS). This computer package will be used to analyse data both in this course and in second and third stage courses in psychology. Topics to be studied include an introduction to computer based data analysis, one and two-way factorial designs and the corresponding analysis of variance.

Textbook

SM378  Design and Measurement 3
No. of hours per week: four hours daytime
Prerequisite: SM278
Assessment: continuous

Subject aims and description
A stage three, first-semester subject in research design and statistical analysis that is designed to complement concurrent and future studies in psychology.
In this subject the topics included in SM278 are extended and further topics in design and analysis are considered. The SPSS package will be used to perform the various statistical analyses.

Topics to be studied include correlation and an introduction to multiple regression, analysis of covariance and factor analysis.

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Department of Economics

Head
D.J. Thomas, BA(NTU), MA(Syd), PhD(NTU)

Principal Lecturer
J.B. Wielgosz, BCom(Hons), MA, DipEd(Melb)

Senior Lecturers
P.G.L. Harkness, BAGSc(Melb), MAdm(Mon)
S. Holligan, BEd(Hons)(LaT)
D.J. Owens, BEd(Hons), MAdm(Mon)
R.N. Smith, BCom(Hons), DiplEd, DipContEd(SIT), MCom(NSW), GradDipBIT(SIT)

Lecturers
C. Bany, MEd(Mon)
M. Freebairn, BAGSc, DipEd(SIT)
J. Gerstman, BA, BEd(Mon)
J. Watkins, MEC, DipEd(Mon)

Department of Information Systems

Head
D.G. Adams, BCom(Melb), MAdm(Mon), TSTC

Associate Professor
M.G. Nicholls, MEC, PhD(Mon), MACE

Principal Lecturers
J.A. James, DipMedRadiotherapy, GradDipDP(RMIT)
G.M. Leonard, BSc(Melb), MACS
A. Murphy, BCom(Melb), CPA
J.F. Pidgeon, BA, DipEd(Mon)

Lecturers
N.L. Bailey, BSc(Leeds), GradDipEd(HIE), MACS
P.M. Kindler, DiplBus, DipEd(CIT), CPA, MACS
L. Schulberg, BEd, Ed(Mon)
R. Sicilia, BSc(Hons), MPhil(Mon), MIAF, MAIP, MACS
P.M. Simmons, BSc(Hons)(Sheff), MACS
J.A. Sykes, BE(Melb), DipEE(CIT), PhD(UNSW)

Department of Law

Head
P. Holland, DipEd, BCom, LLB(Hons)(Melb), MEnvSc(Mon), Barrister & Solicitor (Vic) Supreme Court

Principal Lecturer
B.R. Clarke, BEd, LLM(Mon), GradDipMkt(CIT), Barrister and Solicitor (Vic) Supreme Court

Senior Lecturers
S. Kapnoullas, LLM, BA, DipEd(Melb), Barrister and Solicitor(Vic) Supreme Court
M. Psaltis, BA, LLM, DipEd(Melb), Barrister and Solicitor(Vic) Supreme Court

Lecturers
S. Edmonds, LLB(Adel), Barrister and Solicitor(Vic) Supreme Court
P. McIntosh, BJuris, LLB(Mon), Barrister and Solicitor (Vic) Supreme Court
C. Parkes, LLB(Tas)
P.J. Pascoe, LLM, BCom(Melb), DipEd, AASA, Barrister-at-Law
S. Wilson, BJuris, LLB(Mon), Barrister and Solicitor(Vic) Supreme Court

Department of Marketing and Organisation Behaviour

Associate Professor and Head
S. Long, BA(Hons)(Melb), TSTC, MEd(Mon), PhD(Melb)

Associate Professor
C. Christodoulou, BAGSc(Melb), MSc, MAdm, PhD(Mon)
Principal Lecturers
J. Newton, MA(Leeds), BBus(CIT)
G. Watts, BCom, MBA, DipEd(Melb), Grad DipAppScPsych(SIT)
L.A. Zimmerman, BCom, MBA(Melb)

Senior Lecturers
B. Cargill, BA(Melb), MARS
G. Drummond, MA(Melb)
B. Evans, BAppSc(RMIT), MAdmin(Mon), GradIMA
M. Enright, DipBusStudies(CIT), BA(Melb)
L. Gomm, BEd, GradDipOrgBeh
S. Long, BA(Hons)(Melb), TSTC, Med(Mon), PhD(Melb)
A. Rodger, BBus, GradDipBusAdmin(SIT), BA(LaTrobe)

Lecturers
J.G. Batros, BSc, BA(Melb), TSTC
D. Ching, BSc(Hons), MBus(Mon), DipAppChem(SIT)
P. DiVirgilio, BBus(CIT)
A. Koch, MA(S.G.P.S.Warsaw), PhD(Wroclaw)
B. Lasky, BBus(PublAdmin)(RMIT), GradDipPersAdmin(Victoria), AIPMA, AITD
H. Russell, BBus(RMIT), GradDipEd(Hawthorn)
J. Shannon, BA(Qld)
J. Stewart, BA, BEd, MedStud(Mon), TPTC
T. Tyson, MA(Cambridge)
K. Van Veenendaal, AssDipMktg, BBusMktg(CIT)
J. Westwood, BEco(ANU), MScTourismMktg(Surrey-UK)

Courses offered in the Faculty of Business

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Duration</th>
<th>Mode</th>
<th>Part-time</th>
<th>Entry Requirements</th>
<th>Special Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A055</td>
<td>Bachelor of Business</td>
<td>3 years</td>
<td>Full-time</td>
<td>6 years</td>
<td>Satisfactory completion of VCE or equivalent (including all English work requirements).</td>
<td>It is advisable to have studied mathematics to at least Year 11 level.</td>
</tr>
<tr>
<td>A055</td>
<td>Bachelor of Business plus industry based learning</td>
<td>4 years</td>
<td>Full-time</td>
<td>8 years</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td>A064</td>
<td>Bachelor of Business (Honours)</td>
<td>4 years</td>
<td>Full-time</td>
<td>8 years</td>
<td>As above</td>
<td></td>
</tr>
<tr>
<td>A063</td>
<td>Bachelor of Business (Honours) plus industry based learning</td>
<td>5 years</td>
<td>Full-time</td>
<td>6 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A057</td>
<td>Bachelor of Business/Bachelor of Arts</td>
<td>4 years</td>
<td>Full-time</td>
<td>8 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A058</td>
<td>Bachelor of Business</td>
<td>3 years</td>
<td>Full-time</td>
<td></td>
<td>Taught in conjunction with the Faculty of Applied Science.</td>
<td></td>
</tr>
<tr>
<td>A070</td>
<td>Business Administration</td>
<td>H</td>
<td>—</td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A072</td>
<td>Business Information Technology</td>
<td>H</td>
<td>—</td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A074</td>
<td>Taxation and Finance</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td>An appropriate</td>
<td></td>
</tr>
<tr>
<td>A083</td>
<td>Business Administration</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td>A limited number of places are available for applicants with no formal qualifications but considerable work experience.</td>
<td></td>
</tr>
<tr>
<td>A084</td>
<td>Management Systems</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td>For the Graduate Diplomas</td>
<td></td>
</tr>
<tr>
<td>A085</td>
<td>Organisation Behaviour</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A086</td>
<td>Corporate Finance</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A087</td>
<td>Business Information Technology</td>
<td>H</td>
<td>—</td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A089</td>
<td>Market Modelling</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A092</td>
<td>Information Technology Business Administration (MBA)</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td>Refer to course entries.</td>
<td></td>
</tr>
<tr>
<td>A091</td>
<td>Organisation Behaviour</td>
<td>H</td>
<td>—</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A099</td>
<td>Master of Information Technology</td>
<td>H</td>
<td>—</td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A090</td>
<td>Master of Business (by research)</td>
<td>H</td>
<td>—</td>
<td></td>
<td>Refer to course entries</td>
<td></td>
</tr>
<tr>
<td>A001</td>
<td>Doctor of Philosophy (PhD)</td>
<td>H</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
General Faculty Information

Enrolment above standard load
Students must not enrol for more than four subjects full-time or two subjects part-time without permission from the Assistant Registrar. These applications are not normally approved.

Amendments to enrolment
Students must finalise their enrolment by 31 March (first semester) and 31 August (second semester). Subjects cannot be added more than two weeks into a semester, and subjects deleted after the census dates will have a fail result recorded. An Amendment to Enrolment form must be completed for all amendments.

Transfer between full-time and part-time study
Subject to fulfilling any conditions set by the Student Progress Review Committee, a student can transfer between full- and part-time study at the December re-enrolment times without special permission.

Admission to examinations
Enrolment and satisfactory completion of prescribed assignment work are usual prerequisites for admission to a final examination.

Cancellation of enrolment
Students wishing to cancel their enrolment are encouraged to first discuss this action with the Faculty Administrative Officer.

Study at another institution for credit towards a Swinburne award
Students wishing to study at another institution for credit towards a Swinburne award must complete the application form available from the Hawthorn Faculty Office (Level 9, BA Building), Mooroobark Faculty Office (Room MD10, D Block).

Noticeboards
Information for the benefit of all students is displayed on the noticeboards at the Hawthorn campus on Levels 2 and 9 of the Business and Arts Building, and at the Mooroobark campus on the windows of Room MD10, D Block, and it is advisable to check these occasionally. General enquiries should be directed to the Faculty Office at the Hawthorn campus BA916 and at the Mooroobark campus MD10, D Block — please see maps on inside back cover.

Textbooks
Unless otherwise specified in subject outlines, students are advised not to purchase textbooks or references until classes commence. Further information will be given during the first lecture or class.

Cheating and plagiarism
Cheating and plagiarism, that is the action or practice of taking and using as one’s own, the thoughts, writings or other work of someone else with the intent to deceive, constitutes an irregularity under the Swinburne Assessment Regulations. Such an action is a major infringement of the University’s academic values. It is essential that students understand that plagiarism or cheating shall be considered to have occurred if:

- a computer program substantially written by someone else (either another student, a previous student or the author of a publication) is presented as the student’s own work;
- paragraphs, and even sentences in essays which are written by someone else are not enclosed in quotation marks, and accompanied by full reference to source;
- work of someone else is paraphrased, and is not appropriately attributed and referenced.

Subject length
Unless otherwise stated all subjects are semester subjects.

Industry based learning (cooperative education)

Manager
JRW. Gerrand, BEc, CPA
Secretaries:
R. Leithhead
M. Stephens

The industry based learning (IBL) program offers students an opportunity to combine study with practical on-the-job experience. Under the program students spend the third stage of their Bachelor of Business course employed in the professional, business, government or industry sectors on a paid full-time work experience program.

The program is optional and only available to full-time students. At the end of the IBL year students resume their studies at the University. To complete the Bachelor of Business, including IBL, takes a minimum of four years.

The program
Students are invited during the second stage of full-time study to apply for entry into the program. Successful students, who are selected on the basis of academic performance and attitude, are then assisted by the Faculty to find employment. Assistance is given in the form of information sessions with employers, lectures on interview techniques and skills, and general support in making sure that each participating student is placed.

IBL students are assigned a member of the academic staff to act as their mentor and to liaise between the employer and the Faculty.

Students are required to successfully complete a detailed report on their work experience year. Whilst working, students are permitted to study one unit per semester.

Benefits of the program to the students
The IBL year is a wonderful opportunity to combine theory and practice.

- IBL gives students one year of practical experience, enabling them to learn about the working environment, to understand employers’ expectations, ethics and relationships with colleagues.
- IBL gives students a head start to a successful future. As they have already held a job, career decisions are made easier and IBL students have more to offer to prospective employers.
- There is a potential for IBL students to have a job waiting on graduation. Alternatively, part-time employment during final year of study may become available with the employer.
- Students have financial freedom through the opportunity to earn and save money.
IBL enables students to use work experience to choose final year subjects.

**IBL employers**
The following companies have been associated with employing business students:
- Alpha Graphics
- ANZ Bank
- Amcor Ltd
- Arthur Andersen
- Attorney General's Department
- Australian Taxation Office
- Australian National tine
- BDO Parkhills
- B-P
- BP Australia
- Bowater Ltd
- Burge (Aust)
- Cadbury Schweppes
- Carlton & United Breweries
- Chemplex Aust.
- Co-Cam Pty. Ltd.
- Coles Myer
- Coopers & Lybrand
- Creighton-Brown & Co.
- Department of Management & Budget
- Department of Ind. Tech. and Res.
- Duesburys
- Ernst & Young
-Financial Aims Pty. Ltd.
-Ford Aust.
-Hall Chadwick
-Hewlett Packard
-IBM Australia
-Jeffrey Thomas & Partners
-Kraft Foods
-Kwikasair
-McLean Delmo
-Ministry of Education
-MMBW
-Mobil Oil
-National Australia Bank
-Partnership Pacific
-KPMG Peat Marwick
-Philip Morris
-Ragg Weir
-Rockwell Electronics
-Scudera Pty. Ltd.
-Siemens
-Smith Read
-State Bank
-State Superannuation Board
-SEC
-Telecom
-Vic Roads
-William Buck

**Professional Associations**
To be eligible for membership of the various professional associations, students must complete the following requirements:

- **Australian Computer Society (ACS)**
  Students in the Bachelor of Business or Graduate Diploma in Business **Information Technology** with an appropriate selection of units can qualify for level 1 membership of this society.

  Details of the requirements for ACS membership are available from course convenors.

- **Australian Society of Certified Practising Accountants (ASCPA) and Institute of Chartered Accountants in Australia (ICA)**
  To be eligible for associate membership of the ASCPA or entry to the **professional year of the ICA**, graduates must have completed the following post-core units:

  - **BC220** Accounting 2
  - **BC221** Corporate Accounting
  - **BC222** Management Accounting 1
  - **BC223** Management Accounting 2
  - **BC224** Financial Management 1
  - **BC225** Auditing
  - **BC330** Accounting Theory
  - **BC331** Taxation
  - **BE220** **Macroeconomics**
  - **BL220** Contract Law
  - **BL221** Company Law

  Australian Human Resources Institute (course accreditation pending)

  To be eligible for associate membership graduates would need to have followed their first stage core units with all eight organisation behaviour and human resource management units:

  - **BH220** Organisation Behaviour 1
  - **BH222** Organisation Design
  - **BH221** Human Resource Management 1
  - **BH223** Dynamics of the Multi-Cultural Workplace
  - **BH330** Organisation Behaviour 2
  - **BH331** Human Resource Management 2
  - **BH332** Enterprise Bargaining
  - **BH333** Managing Quality in Organisations

  A further two units from other discipline areas

  - **BE223** Industrial Relations
  - **BL332** Employment Law

  are also required, making a total of ten units post-core.

- **Australian Institute of Bankers**
  The Australian Institute of Bankers accepts the Bachelor of Business degree as an approved degree for the purpose of Affiliate membership of the Institute. Affiliate membership is a transitional level leading to Senior Associate status. An Affiliate member is required to undertake specialist banking subjects to complete the educational requirements for Senior Associate status.

  Student membership of the Australian Institute of Bankers is open to all full-time students undertaking the Bachelor of Business degree.

  Institute of Corporate Managers, Secretaries and Administrators

  Information about membership of this association is available from the Assistant Registrar (Business).
Standards of Progress

1. Preamble
All full-time and part-time students enrolled in undergraduate and postgraduate courses in the Faculty are expected to maintain a minimum academic standard to be allowed to continue their studies. Unless otherwise specified, these standards of progress apply to undergraduate and postgraduate students.

2. Progress requirements

2.1 Completion of first year of undergraduate program
Full-time and part-time students are not permitted to enrol for second or third stage subjects unless they have completed, or are concurrently completing, all outstanding stage one subjects. Where a student is enrolled for both first and second stage subjects and wishes to withdraw from a subject, enrolment in stage one subjects must be maintained.

2.2 Standard enrolment load
Full-time students are expected to enrol in, and remain enrolled in, four subjects per semester. Part-time students are expected to enrol in, and remain enrolled in, two subjects per semester. Variations to the standard enrolment load will be permitted only in exceptional circumstances, and will normally be varied for one semester only. Students wishing to increase or decrease their load must apply in writing to the Assistant Registrar before the December re-enrolment period, clearly stating the reasons for wishing to vary their load. Variations to the standard enrolment load can only be undertaken at the December re-enrolment period, and the academic record of the student will be taken into account.

2.3 Change of enrolment status
Students admitted on a full-time or part-time basis are expected to study on that basis for at least two semesters. Students wishing to change their enrolment status (ie. from full-time to part-time or vice versa) must apply in writing to the Assistant Registrar before the December re-enrolment period. Change of status can only be undertaken at the December re-enrolment period, and the academic record of the student will be taken into account.

2.4 Time limit for completion of degree

2.4.1 Undergraduate
Full-time students must complete their degree program within six years of their first enrolment in the course (excluding any periods of leave of absence). Part-time students must complete their degree program within nine years of their first enrolment in the course (excluding any periods of leave of absence). Leave of absence taken as a progress review condition will not be counted for the purposes of degree completion.

2.4.2 Postgraduate
This section does not apply to higher degree by research students. Full-time students are normally expected to complete their postgraduate program within two years of their first enrolment in the course (excluding any periods of leave of absence). Part-time students are normally expected to complete their postgraduate program within a period equal to twice the normal completion time plus one year (excluding any periods of leave of absence).

2.4.3 Students who do not complete their courses within the specified time will be advised in writing of their status, and required to apply to Faculty Board for an extension of time to complete their course. Applicants must specify the reasons for the delay in completing their course within the specified period.

2.5 Higher degree students
Students enrolled for a Master of Business (by research), Master of Business (by publication) or Doctor of Philosophy are governed by progress rules detailed in University statutes (refer to page 413 in this Handbook for further information).

3. Student-at-risk program
Students who do not pass at least 50% of their enrolled load in any semester will be identified as being “at-risk” and will be advised of their status by letter within one week of the publication of results in the first semester of each year. These students will be given the opportunity to discuss their situation with a member of the academic staff chosen from a panel of academic staff.

Attendance at the “at-risk” sessions is not compulsory, but is strongly encouraged.

4. Unsatisfactory academic progress
The academic progress of a student will be considered to be unsatisfactory if:

4.1 in the two most recent semesters in which the student was enrolled, the student fails to pass at least 50% of the student’s workload; or

4.2 the student fails for the third time to pass a subject; or

4.3 the student has failed to meet a condition previously imposed by the Student Progress Review Committee.

The grade NWD — not pass late withdrawal — will count as a fail grade for the purpose of this section.

5. Show cause applications
Students whose progress is considered to be unsatisfactory will normally be advised in writing of their status within one week of results being released, and advised that a recommendation has been made that they should be excluded from the Faculty. Such students are entitled to make a show cause application to the Student Progress Review Committee about why they should not be excluded. No student will be excluded from the Faculty without first having been given the opportunity to show cause to the Student Progress Review Committee as to why they should not be excluded. Such students will not be permitted to re-enrol until the outcome of any show cause application is known.

Show cause applications must be addressed to the Chair of the Student Progress Review Committee and lodged at the Faculty Office by the date specified in the letter to students advising them of their status.
Student Progress Review Committee

6.1 Composition
(a) Chair, appointed by Faculty Board.
(b) Two members of the academic staff selected from a panel of academic staff nominated by heads of departments.
(c) Faculty Administrative Officer.
(d) Where requested by the student, the President or the Student Union or nominee may be present at the Committee for consideration of that case only.

6.2 Procedure
6.2.1 Upon receipt of a show cause application from a student, the Chair and Secretary of the Student Progress Review Committee, on behalf of the Committee, will review the case and decide whether it will be necessary to interview the student.
6.2.2 Additional information from appropriate academic staff about the student’s academic work may be sought by the Student Progress Review Committee before a decision is made.
6.2.3 Students will be advised in writing whether their show cause application has been accepted without interview, or whether an interview with the Student Progress Review Committee is required.

6.3 Powers
The Student Progress Review Committee may, when considering a show cause application:
6.3.1 accept the student’s show cause application and allow the student to re-enrol without condition;
6.3.2 accept the student’s show cause application but place conditions upon the student’s enrolment in the following semester;
6.3.3 require the student to take a leave of absence for a specified period; or
6.3.4 exclude the student from the Faculty for a period of two academic years.

6.4 Enrolment conditions
The academic record of students placed on conditions will be reviewed by the Student Progress Review Committee at the end of the following semester and a decision made to:
6.4.1 permit the student to continue studying without further condition; or
6.4.2 impose a further condition on the student for an additional semester; or
6.4.3 require the student to show cause why they should not be excluded from the Faculty for a period of two academic years.

6.5 Period of exclusion
Students who are excluded from the Faculty will not be permitted to re-enrol for a period of two academic years (four semesters, excluding summer semesters), unless the student was excluded under Section 4.2. Students excluded under Section 4.2 will be permitted to re-enrol once a subject equivalent to the subject failed for the third time has been successfully completed at another higher education institution and the student has provided proof of passing the equivalent subject at that institution.

9. Re-enrolment after a period of exclusion
Students wishing to re-enrol after a period of exclusion must contact the Faculty Administrative Officer three months prior to the semester in which they wish to re-enrol to receive advice about appropriate procedures.

Prizes and Scholarships
The Faculty has been fortunate in obtaining a large number of scholarships and prizes for its students, mostly provided by industry. These are to encourage and reward the academic excellence that the Faculty at all times encourages.

Faculty of Business Scholarships
Sir Reginald Ansett Memorial Scholarship
Awarded on interview, financial need and academic ability to a business student commencing full-time studies.

T.W. Higgins Scholarship
Awarded on the basis of need and academic performance to a full-time second or third stage student in the Faculty of Business. Applications close in April.

Business Computing Scholarship
Awarded on interview to a student entering final stage accounting.

Swinburne Entrepreneurial Accountant Scholarship
Awarded on the basis of personal qualities to a business student who has completed at least two years of full-time study.

Swinburne Association of Marketing Scholarship (SAM Scholarship)
Awarded on interview to a second stage computing student.

Faculty of Business Prizes
Annual awards are made by the following donors:
Arthur Andersen and Co. Prize
The student with the best aggregate performance in Financial Management.

Bill Hibble, Arthur Andersen and Co. Prize
The best performance in a computing programming unit.

Australian Chamber of Manufactures Prize
The best student in Industrial Relations.

Australian Chamber of Manufactures Prize
The best student in Industry & Government.
Australian Computer Society Prize
The best student in final stage computing practical work. (Awarded to a BBus student in 1993 — alternate years awarded to BAppSc student.)

The Australian Institute of Management Malcolm Moore Medal
The best student completing the Bachelor of Business with a major in economics.

Australian Institute of Management Business Administration Prize
The best student completing the Graduate Diploma in Business Administration selected for entry upon completion of the Graduate Certificate in Business Administration.

Australian Society of Certified Practising Accountants Prizes
The best students in first, second, and third stage accounting units.

Australian Society of Corporate Treasurers’ Prize
The best overall student completing the Graduate Diploma in Corporate Finance.

Blashki Regalia Supplies Pty. Ltd.
For the best student in the Graduate Certificate in Business Administration ‘public’ course.

Brooke Bird and Co. Prize
The best student in Company Law.

William Buck and Co. Prize
The best student in the unit Business Computing.
1. The best student in Marketing Law.
2. The best student in International Business Law.
3. The best student in Advanced Tax.

Carlton and United Breweries Limited Prize
The best course work student in the Master of Business (Organisation Behaviour).

Commonwealth Bank Prize
The best student in Financial Institutions and Monetary Policy.

Coopers and Lybrand Prize
The best student in Management Accounting 1 and Management Accounting 2.

DMR Prizes

Deloitte, Ross and Tohmatsu Prize
The best student in EDP Auditing.

Department of Economics Prize
The best student in Macro-economics.

Department of Economics Prize
The best student in Micro-economics.

Economic Society of Australia Prize
The best student with a major study in economics.

EDP Auditors Association Prize
The best student in Auditing and a second or third stage IS unit.

ICI Prize
The best final stage computing student.

Integrity Prize
The best student in Accounting 1.

KPMG Peat Marwick (incorporating Touche Ross and Co.) Prize
The best student in undergraduate Auditing.

KPMG Peat Marwick (incorporating Touche Ross and Co.) Business/ Japanese Prize
The best second stage student in the BBus/BArts (Japanese) program.

Logica Prize
The best performance in Data Base Management Systems.

McGraw-Hill Book Australia Pty. Ud.
The best student in Organisations and Management.

Monier Roofing Prize
The best student in International Trade.

National Australia Bank Prize
The best student in Economic Research.

National Mutual Prize
The best student in The Social Rychology of Organising.

Rigby Cooke Prize
The best student in Legal Environment of Business.

Siemens Ltd Prize
The best student in Contract Law.

Swinburne Graduate Society
Best overall student in the Graduate Diploma in Business Administration.

Thomas Nelson Australia Prize
Best student in the Marketing Concept.

VicRoads Prize
The best student in Leadership and Change in Organisations.

The following prize is presented by Swinburne University of Technology:

T.W. Higgins Prize
The best graduating student in the degree of Bachelor of Business.

Note: All prizes and scholarships are correct at time of publication. However, the Faculty's ability to award prizes and scholarships is dependent on the continued support from a variety of sponsors. Unfortunately, sponsors may withdraw their support at short notice and the Faculty would therefore be unable to provide the nominated prize or scholarship.

Swinburne Graduate Society of Business
The Graduate Society of Business is the oldest of the Swinburne alumni associations, being formed in 1977 from the graduating students of the Graduate Diploma in Business Administration.

Active for over sixteen years, the Society has a network of over one thousand past students, and now encompasses and supports all current and past students in completion of the Graduate Certificate, Diploma and Masters programs in the Faculty of Business.
The Society operates as an independent body relying on members cooperative efforts and a committee in assisting the cause of cooperative and further education, extension of qualifications and industry networking inside and externally to the university.

Activities include regular newsletters, seminars and meetings, an extensive personal network, working business lunches, library membership and other benefits of the university. Annual membership is $25; Life membership is optional at $100; Student membership at $10; and Library membership is $15.

Contact: Brian Golland, President, PO. Box 145, Camberwell 3124. Phone: 432 2511 or 435 6614 A.H. or fax 432 2500.

Undergraduate Course information

A055 Bachelor of Business

The Bachelor of Business is a three-year full-time (or six-year part-time) degree program offered at both the Hawthorn and Mooroolbark campuses. Part-time study is available during the day only at Mooroolbark and it is expected that students who commence their course at Mooroolbark will undertake their complete course there.

Entrance requirements

The normal entry requirements for the Bachelor of Business degree program is successful completion of the VCE or equivalent. It is recommended that applicants have studied mathematics to at least Year 11 standard.

Other qualifications

Applicants must have a qualification deemed to be the equivalent of the VCE by the Victorian Curriculum and Assessment Board. Such qualifications may include interstate and overseas qualifications and associate diploma studies at a TAFE institution.

Special entry

Applicants who have not completed a Year 12 qualification or who completed a Year 12 qualification five or more years ago are required to sit for an aptitude test before they can be considered for admission. This test is administered by the Victorian Tertiary Admissions Centre.

Quota

Not all qualified applicants can be accepted because of the limited number of available places.

Applications

All applications for the Bachelor of Business, including special entry, later year entry and part-time, must be made through the Victorian Tertiary Admissions Centre (VTAC).

Bachelor of business specialisations

The course leading to the award of Bachelor of Business offers major, minor and elective studies in accounting, business law, business modelling, computing, economics, finance, marketing and organisation behaviour.

The following majors are available from the Faculty of Arts: Australian studies, Asian studies, cultural studies, Italian, Japanese, Korean, literature, media studies, sociology, political studies, psychology, philosophy and cultural inquiry and Vietnamese.

In addition to the business core units one major must be taken from the Faculty of Business.

Key features of the major streams are described in the following section.

Accounting

Accounting is the basic language of business. The accounting units offered by The Accounting Department cover many different aspects that accounting embraces in today's business activities.

Stage one is designed to give students an overview of accounting from a user point of view and to introduce the basic principles and concepts underlying the accounting discipline. Emphasis is placed on accounting as an information system and a commercial computerised software package is incorporated into the program.

Stage two units cover the external accounting financial statement requirements of business entities and the internal management accounting systems developed by business entities to enable them to better manage their activities.

Stage three students are able to study units in taxation, auditing, finance, accounting theory, management accounting and financial accounting.

All units are designed to integrate the theoretical concepts with the practical reality of today's business environment. Students with an accounting major and other appropriate units are eligible for membership of the two major professional accounting bodies — the Australian Society of Certified Practising Accountants and the Institute of Chartered Accountants. Past students have found their accounting qualifications recognised both here and overseas.

Many accounting graduates do not pursue careers in the public accounting profession. They find their niche in organisations in industry, commerce, the public sector, the finance sector and in business consulting. These careers may well be in accounting or financial specialisations but may find careers in general management or other functional specialisations.

Business Law

The business law major will provide students with the knowledge necessary to appreciate the impact law has on the business environment. With the increasing legal regulation of society it is essential that students are aware of the factors which either encourage or inhibit business activities.

The core unit, Legal Environment of Business, introduces students to basic legal concepts and important areas of business law. The unit concentrates on the inter-relationship of law, business and society. A wide range of electives deal with various aspects of business law including: contract; company; marketing; employment; international trade; retailing; finance and computing law.

Law units emphasise skills such as the ability to understand arguments, to manipulate abstract concepts and to communicate verbally and in writing. These skills highlight the vocational value of law units to students.

Whilst not leading to a legal qualification, a business law major can lead to a range of career and positions in insurance, banking, finance and the public sector. Legal knowledge would be valuable to a property officer, accountant, trust officer/administrator, company legal officer, company secretary or local government administrator.

Business Modelling

The business modelling major will provide a comprehensive set of skills that are necessary for the successful analysis of everyday business problems and to assist in the task of decision making.
A business modelling major or minor will provide students with valuable tools and skills that will complement majors or minors undertaken in other disciplines.

The applied approach to business modelling and data analysis adopted within the discipline is designed to meet the needs of both industry and the business community.

Stage one provides students with an introduction to basic business modelling and data analysis tools required to support subsequent studies, both within the business modelling and other faculty disciplines.

Stage two introduces a variety of analytical tools and provides the additional skills that can be applied directly to everyday problems in the business world: resource allocation (fundamental to the world of commerce); business forecasting (essential for business survival); managing inventory; basic decision making and planning for changes in Australia’s population attributes (necessary to understand changing business markets).

Stage three provides students with additional tools that are necessary to enable an analysis of a number of real-world business modelling problems. This stage is also designed to strengthen and focus the skills already obtained enhancing the value of possessing these skills to the business community.

In today’s world, very little can be achieved without the application of business modelling practices and techniques. Students completing a major or minor sequence of study in business modelling will also inherit valuable multi-disciplinary skills that are extremely marketable within the business community.

**Computing**

In today’s world, information technology has pervaded every aspect of business organisations. As such, the study of computing and information systems is vital for any business student.

There are a number of discipline areas within computing and the student can select options based on interest or career aspirations. These options can be categorised under three main headings:

**Business computing**

This would be taken by students who would see themselves as users of information systems rather than computer professionals. The emphasis is on the effective use of information technology within an organisation and the development of skills for solving business problems.

**Business systems**

This would be taken by students who wish to focus on the analysis of business information needs as a basis for specification of computer based information systems rather than the technical aspects of design and development.

**Software development**

Students taking this area will use a wide range of computer software. They will be seeking to specialise in the design, development and implementation of computer based systems in the business environment.

Selecting one of these options in combination with other relevant business studies enables the graduate to effectively apply information technologies in the solving of business problems.

Students who select appropriate units from the information systems offerings qualify for level one membership of the Australian Computer Society.

**Economics**

Understanding economic principles is a fundamental requirement for a career in business. An economic approach to important practical social and business problems is the focus of the economics major.

Stage one is designed to acquaint students with economic principles necessary to understand and evaluate economic commentary and reports and to analyse the operations of government and industry in Australia.

In stage two students may choose from units which emphasise the relationship between industry and government; managerial economics; environmental economics; industrial relations; macro-economic policy and economic techniques used in business.

Third stage provides an added insight into some of the specialist practical areas in economics, such as international trade, international finance, public finance, financial institutions and monetary policy and industry relevant economic research.

Students completing an economics major find employment in a wide range of challenging fields. These include administration in both public and private sectors, management consulting, economic policy evaluation and financial analysis and economic research.

**Finance**

Finance is a field of study which is concerned with financial and capital markets, government influences on those markets and the role of the organisation within this framework. Finance theory is a relatively recent development, and draws on the disciplines of both economics and accounting. It is taught under the auspices of both departments. A finance major will equip graduates with a knowledge of: financial instruments which are available; investment options available for both personal and enterprise investment; how different forms of financial markets function; the relationship between risk and reward; and the relationship between the business enterprise and financial markets, both domestic and international. It will lead to knowledge which assists in making financial decisions for an organisation.

**Marketing**

Successful companies take the path of ‘market focus’, ie. their strategies are customer driven. Marketing deals with the building and implementation of customer focus. The meaning of marketing is often misunderstood. Understandably so, as we see many magnificent advertisements with out any real substance as to customer benefits and/or the delivery of these benefits. Frequently no distinction is made between selling and marketing.

Unfortunately marketing has been introduced into many organisations as the ‘inword’, a kind of cosmetic change, the solution to the company’s problems, without changing the focus and the attitudes prevailing in the organisation. It has not worked resulting in companies becoming disillusioned with marketing. These companies did not understand the meaning of marketing.

What does it mean? The answer is relatively simple: put yourself inside the skin of your customers and forget yourself for a while. That in itself is difficult to do, but that is exactly the difference between cosmetic and real marketing.

To make this transition involves a rethink on your part. Instead of thinking on behalf of your customers you have
got to learn to listen to your clients, accept what they say at face value and execute what they want.

At Swinburne we explain the components of a business plan and marketing's central role in strategy. Students are introduced to topics such as: consumer behaviour; demand determinants; customer focus; market research; market planning; product and services management; tourism; retail; advertising and promotion; international marketing and cultures.

Students are encouraged to think through problems and to find their own answers. They are introduced to understanding thinking processes to ensure that they make the most of their abilities. Topics like focus, vision, understanding, creativity, the power to influence the future are all part of the marketing curriculum.

organisation Behaviour (OB)

The units in this integrated area broadly cover many aspects of organisations and the human behaviour and processes which occur within those settings.

As a sequence of study, it aims to:

1. Prepare students for a range of management roles in business;
2. Develop a strong understanding of organisation theory and structures, the behaviour of groups, the individuals who comprise those groups and the dynamic inter-relationships among all these parts and aspects;
3. Develop students' capacity to reflect upon and understand their own, and others behaviour;
4. Develop communication and personal competence so that students are better equipped to fill the organisational roles which require interpersonal skills.

The organisation behaviour study area can be taken as a vocational preparation in human resource management (HRM), leading to associate membership of the Australian Human Resources Institute (course accreditation currently being sought with AHRI). To gain such eligibility, students would need to take all eight units offered in the OB/HRM area, in appropriate sequences and to additionally include in their degree two further specified units.

Many students will wish to take OB studies without a career in HRM in mind. Such a major would provide excellent insight into human behaviour in organisations and the management of people, and would combine well with any other vocational major. All business professionals ultimately work in or with organisations and with people.

A large proportion of the course material in these major streams is taught in an experiential manner which requires active involvement by students, structured reflection, linkage with 'outside' experiences, and thinking through application issues.

Bachelor of Business Course Structure

Students undertake a total of twenty-four units, consisting of a core of seven units, and a combination of majors, minors and electives. A major consists of six units (at least two at stage three) from one specialisation. A minor consists of four units (at least one at stage three) from one specialisation.

Students should note the following restrictions on units that can be credited towards the Bachelor of Business:

- a maximum of twelve units from any specialisation;
- a maximum of ten first stage units (eleven for languages); and
- a minimum of four third stage units.

<table>
<thead>
<tr>
<th>Mandatory units (7 units)</th>
<th>Majors (6 units)</th>
<th>Minors (4 units)</th>
<th>Electives</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC110 Accounting 1</td>
<td>BE110 Microeconomics</td>
<td>BT110 Information Technology A</td>
<td>BM110 Marketing Concept</td>
</tr>
<tr>
<td>BH110 Organisations and Management</td>
<td>BQ111/ Quantitative Analysis</td>
<td>BL110 Legal Environment of Business</td>
<td>Accounting</td>
</tr>
<tr>
<td>BC320 Accounting 2</td>
<td>BC221 Corporate Accounting</td>
<td>BC222 Management Accounting 1</td>
<td>BC223 Management Accounting 2</td>
</tr>
<tr>
<td>BC224 Financial Management 1</td>
<td>BC225 Auditing</td>
<td>BC330 Accounting Theory</td>
<td>BC331 Taxation</td>
</tr>
<tr>
<td>BC336 Advanced Taxation</td>
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</tr>
</tbody>
</table>
Business Law

Stage one (core unit)
BL110 Legal Environment Of Business

Stage two
BL220 Contract Law
BL221 Company Law
BL222 Marketing Law
BL223 Computer Law
BL224 Retailing Law
BL225 Tourism Law

Note: BC331 Taxation and BC336 Advanced Taxation may be counted towards a business law major or minor.

Stage three
BL330 Advanced Company Law
BL331 International Business Law
BL332 Employment Law
BL333 Finance Law

Business Modelling

Stage one (core unit)
BQ110f Quantitative Analysis (Enabling)
BQ110 Quantitative Analysis A
BQ111 Quantitative Analysis B

Stage two
BQ220 Business Forecasting
BQ221 Marketing Data Management*
BQ222 Quantitative Management Techniques
BQ223 Business Demography

Stage three
BQ330 Market Modelling
BQ331 Survey Research Methods
*BQ221 — this subject is replacing BE225 Economic Techniques for Business.

Computing

Stage one (core unit)
BT110 Information Technology

Stage two
BT220 Data Analysis and Design
BT221 Business Computing
BT222 Business Computer Applications
BT223 Information Systems 1
BT224 Programming 1A
BT225 Programming 2
BT226 Knowledge Based Systems
BT227 Programming 1B

Stage three
BT330 Data Base
BT331 System Architecture 1
BT332 System Architecture 2
BT333 Information Systems 2
BT334 Information Technology Strategies
BT335 Business Software Engineering
BT336 Advanced Application Development
BT337 Programming 2B

Economics

Stage one (core unit)
EE110 Microeconomics

Stage two
EE220 Macroeconomics
EE221 Managerial Economics
EE222 Industry and Government
EE223 Industrial Relations
EE224 Economic Evaluation
EE226 Applied Macroeconomics
EE227 Environmental Economics

Stage three
BE331 Public Finance
BE332 Economic Research
BE333 Financial Institutions and Monetary Policy
BE334 International Trade
BE335 International Finance
BE336 Economics of Social Issues
BE337 Economic Development
BE338 Comparative Labour Relations
BE339 Comparative Economic Systems

Organisation Behaviour

Stage one (core unit)
BH110 Organisations and Management

Stage two
BH220 Organisation Behaviour 1
BH221 Human Resource Management 1
BH222 Organisation Design
BH223 Dynamics of the Multi-cultural Workplace

Stage three
BH330 Organisation Behaviour 2
BH331 Human Resources Management 2
BH332 Enterprise Bargaining
BH333 Managing Quality in Organisations
BH334 Asian Business

Marketing

Stage one (core unit)
BM110 The Marketing Concept

Stage two
BM220 Market Behaviour
BM221 Marketing Research
BM222 Marketins Plansin

Stage three
BM330 Product Management
BM331 Service Marketing and Management
BM332 International Marketing
BM333 Communications
BM334 Retail Marketing
BM335 Tourism Marketing
BM336 European Business Studies
BM337 Advanced Services & Marketing Management

Other
BH334 Asian Business (Korean/Thailand)
BI300 Industrial Project (not counted towards degree)

Equivalent subjects

BQ221 Marketing Data Management and BE225 Economic Techniques for Business are equivalent subjects and students are permitted to enrol in one only.

Prerequisites

Students must have passed prerequisites listed for each subject. Subject conveners must be consulted if students wish to enrol in a subject for which they do not have the stated requisite.

Exemptions

A maximum of twelve exemptions for study completed at another tertiary institution may be granted towards the Bachelor of Business degree. Applications should be made at the time of enrolment on an Applications for Exemptions form which must be accompanied by a copy of previous academic records and syllabus details for the subjects on which the exemptions are claimed.
Bachelor of Business (Honours)

Introduction

The Bachelor of Business (Honours) program provides students with an opportunity to enhance their research ability and permits further studies and specialisation in their discipline. The Bachelor of Business (Honours) program is offered by the Departments of Accounting, Business Law, Business Modelling, Economics, Information Systems, Marketing and Organisation Behaviour.

It is a program that offers students the opportunity to add considerable depth to their understanding of concepts within their chosen discipline and encourages students to pursue excellence in their studies at a higher level.

The program encourages a multidisciplinary approach by permitting students to undertake, where appropriate, subjects offered by other departments, faculties or institutions.

Program duration

The Bachelor of Business (Honours) program may be undertaken over one year full-time or over two consecutive years part-time.

Admission requirements

A student may be admitted into the Bachelor of Business (Honours) program if they have satisfied the requirements for a Swinburne Bachelor of Business degree and have achieved an average level of attainment of a credit (C) or better in an appropriate discipline or range of disciplines considered by the Faculty of Business Honours Committee to be acceptable for entry to the Bachelor of Business (Honours) program.

Program timetable

The honours program consists of a 25% research methodology component, a 25% discipline specific component and a 50% research project component.

Research methodology component

The research methodology unit (BQ405) aims to equip students with the necessary research skills to conduct studies for higher degrees. It is designed to facilitate the development of independent learning skills. Students will be presented with various research methodologies appropriate to their chosen discipline as well as those used in other disciplines. Two thirds of the unit will be presented as a common core, with one third of the syllabus being discipline specific. Assessment will be based on assignments, case studies and presentations and teaching methods will include formal lectures and tutorial discussion groups and will make extensive use of library resources.

This unit is compulsory for all Bachelor of Business (Honours) students and no prerequisite is necessary. Subject to approval from the Faculty of Business Honours Committee, a pass in subject at a graduate level may entitle the student to an exemption from this unit.

Discipline specific and research components

Students should seek advice from the Honours Convener in the appropriate department when formulating their discipline-specific course of study and their research project proposal.

Students may, subject to approval, undertake selected honours level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit a proposal to their Honours Convener for approval prior to the commencement of their honours program. Approval for a student’s discipline specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision. Research projects may be individually supervised or supervised within a group seminar setting.

As part of the Bachelor of Business (Honours) program, students may be required to make class presentations at progressive stages in their program and to attend and participate fully in a series of seminars conducted by staff.

At the end of their research component students will be required to submit a written dissertation of approximately 15,000 words in length.

Bachelor of Business/Bachelor of Arts — double degree

The Bachelor of Business/Bachelor of Arts double degree is of four years duration (thirty-two units) and is designed to enable students to complete the compulsory requirements for any business major and minor together with the full range of available Japanese, Korean, Italian or Vietnamese units in order to complete the requirements of two degrees.

Entrace requirements

See section under Bachelor of Business above.

Degree structure

Students must complete the core units of the business degree (seven units) and a major and minor in the Faculty of Business, a minimum of seventeen units; plus eleven mandatory units in the Faculty of Arts; and elective units which may be selected from subjects offered by either faculty. Students should note that a maximum of twelve stage one units can be credited towards the Bachelor of Business/Bachelor of Arts.
The following language units are studied depending upon the language specialisation chosen:

**Japanese**
- **Beginner’s stream**
  - AJ103 Japanese 1A
  - AJ104 Japanese 1B (2 units)
  - AJ203 Japanese 2A
  - AJ204 Japanese 2B
  - AJ303 Japanese 3C
  - AJ304 Japanese 3D
- **Advanced stream**
  - AJ105 Advanced Japanese 1A
  - AJ106 Advanced Japanese 1B (2 units)
  - AJ205 Advanced Japanese 2A
  - AJ206 Advanced Japanese 2B
  - AJ305 Advanced Japanese 3C
  - AJ306 Advanced Japanese 3D
- **Both streams — non-language subjects**
  - AJ102 Introduction to Japan — A Cultural Overview
  - AJ202 Communication in Japanese
  - AP204 Modern Japan
  - AJ302 Work Experience in Japan (elective)
  - AJ307 Reading Japanese Newspapers
  - AJ308 Japanese for Tourism and Hospitality
  - AJ309 Japanese for Business and Industry

**Italian**
- **Beginner’s stream**
  - AA109 Italian 1X
  - AA110 Italian 1Y (2 units)
  - AA209 Italian 2X
  - AA210 Italian 2Y
  - AA309 Italian 3X
  - AA310 Italian 3Y
- **Advanced stream**
  - AA106 Advanced Italian 1A
  - AA107 Advanced Italian 1B (2 units)
  - AA206 Advanced Italian 2A
  - AA207 Advanced Italian 2B
  - AA306 Advanced Italian 3A
  - AA307 Advanced Italian 3B
- **Both streams**
  - AA313 Contemporary Italy
  - **Non-language Subjects**
  - AA102 Understanding Italy
  - AA205 The European Community
  - AA308 Italian Business Practice
  - **Electives**
  - AA208 20th Century European Literature and Thought
  - AA312 The European Community II

**Korean**
- **Beginner’s stream**
  - AK102 Traditional Korea
  - AK103 Korean 1A
  - AK104 Korean 1B (2 units)
  - AK202 Korean Society
  - AK203 Korean Politics and Economy
  - AK205 Korean 2A
  - AK206 Korean 2B
  - AK301 Korean 3B
  - AK303 Korean 3C
  - AK304 Korean 3D
  - AK305 Reading Korean Newspapers

**Vietnamese**
- AV103 Vietnamese 1A
- AV104 Vietnamese 1B (2 units)
- AV203 Vietnamese 2A
- AV204 Vietnamese 2B
- AV303 Vietnamese 3A
- AV304 Vietnamese 3B
- AV305 Vietnamese 3C

*This course is undergoing accreditation and will be offered in 1994.

**Bachelor of Information Technology**

**Manager**
- G.A. Murphy, BCom, CPA

**Administrative Officer**

To be appointed

The course is offered only as a full-time program of three years’ duration. Students are actively engaged in the course for an average of forty-four weeks each year. There are eight segments in the course — four semesters, two summer terms and two twenty-week periods of industry based learning. These provide a course which is essentially a four year course completed in three years.

Swinburne awards a scholarship to each student admitted to the course. Scholarship levels are expected to be an average of $9,000.

**Career potential**

The course equips graduates to apply information technology within business and industry and provides them with an appropriate grounding in management education to prepare them for future roles in management.

**Prerequisites (entrance 1994)**

Units 1 and 2: four units of Mathematics, Units 3 and 4: one of Change and Approximation. Reasoning and Data, or Space and Numbers.

**Course structure**

- **Segment 1**
  - IT101 Introduction to Programming 1 10.0
  - IT102 Decision Analysis 1 10.0
  - IT103 Business Applications and Systems 1 10.0
  - IT105 Behaviour and Communications in Org. 10.0
  - BC110 Accounting 1 10.0
- **Segment 2**
  - IT201 Decision Analysis 2 10.0
  - IT202 COBOL programming 10.0
  - IT203 Business Applications and Systems 2 10.0
  - Plus 2 Non-computing Electives each 10.0
- **Segment 3 (Summer Term)**
  - IT301 Systems Software 1 16.5
  - IT302 Organisation Behaviour 17.0
  - IT303 Data Base Management Systems 1 16.5
  - **Segment 4**
  - IT401 Industry Based Learning 50.0

**Segments 5 and 6**

Ten units must be studied in these two consecutive segments. They can be taken in any order that prerequisites allow, and must include six core units, four chosen from the specialist units on offer and two non-competing electives.

**Core units†**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT501</td>
<td>Systems and Information Analysis 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT503</td>
<td>Data Base Management Systems 2</td>
<td>10.0</td>
</tr>
<tr>
<td>IT504</td>
<td>Data Communications 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT509</td>
<td>Software Engineering 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT601</td>
<td>Systems and Information Analysis 2</td>
<td>10.0</td>
</tr>
<tr>
<td>IT609</td>
<td>Software Engineering 2</td>
<td>10.0</td>
</tr>
</tbody>
</table>
Other approved specialist computing units may be chosen from either the Bachelor of Applied Science or the Bachelor of Business courses.

Segment 7
IT701 Industry Based Learning 50.0

Segment 8 (Summer Term)
IT803 Emerging Information Technologies 25.0
IT804 Computing in the Human Context 25.0

t All units will not be offered each semester.

Application procedure
See entry under 'General Information'.

Postgraduate Course
information

AO70 Graduate Certificate in Business Administration

This program is a two semester course intended to provide entry to management studies for managers with excellent business experience. Special provision is made for non-graduate entrants who are excluded from similar graduate diploma programs through lack of an acceptable undergraduate qualification.

Course objectives
At the completion of the course, it is expected that candidates:

- will have completed a business course containing a body of knowledge and technology which is relevant to immediate and potential business opportunities;
- will have a recognised qualification which will assist them in developing their careers in business, and;
- will be equipped with suitable skills necessary to continue with further postgraduate study in business administration.

As candidates will already be established in business careers, it is expected that the key vocational outcomes will arise from better current job performance as well as new opportunities opening in the broader fields of management and administration within their current organisations.

Entrance requirements
In order to be accepted into this course, applicants must have:

- a recognised undergraduate or postgraduate degree in a discipline other than business and a minimum of four years practical business experience, or;
- at least six years practical business experience at middle management level and a good track record as judged by the selection panel.

Course structure
BC401 Accounting for Management
BH403 Managing Organisations and People
BM401 Marketing Management
BE401 Economics for Businesses

Plus
Four sessions in Financial Modelling

The course may be run 'in-house' for organisations where a significant number of candidates are available. In such cases, organisations may choose an alternative course comprising:

- BC401 Accounting for Management
- BE401 Economics
- BH403 Managing Organisations and People
- BM401 Marketing Management

Progression to graduate diploma
Students who perform very well in the graduate certificate may be eligible for entry into the Graduate Diploma in Business Administration. However, success in the graduate certificate does not guarantee entry to the graduate diploma. Graduate certificate students who are accepted into the graduate diploma would normally gain exemptions in four graduate diploma units, viz BC501 Introduction to Financial Management 1, BM501 Marketing Management, BH501 Administration of Organisational Systems and BE501 Economics.

Fees
The Graduate Certificate Business Administration is a full-fee paying course. $5,750.

AO72 Graduate Certificate in Business Information Technology

This course is equivalent to one semester of full-time study or two semesters part-time. There are a number of options associated with this course, which are relevant both to people without any computing and those with substantial computing experience.

Course objectives
- to widen the opportunities for access and participation in the tertiary education system of those currently employed in the business sector;
- to provide a re-entry to tertiary study for graduates who, for whatever reason, would benefit from a more supportive learning environment;
- to provide an entry to postgraduate study for those people with excellent business experience but not formal undergraduate qualifications and who, by virtue of their age, experience, work responsibilities and other commitments, are in practical terms excluded from undergraduate and TAFE certificate courses; and
- to prepare candidates for further postgraduate studies in business information technology.

Option 1 — no prior experience
Objectives
The course is designed to provide candidates with the basic information technology skills necessary to support a successful career in business.

The primary objectives of this course are:

- to develop within candidates the basic information technology skills necessary to support a successful career in business;
- to provide formal information technology education for personnel involved in information systems but who lack a broad perspective of information technology;
- to develop candidates' analytical and creative skills in using information technology for business planning, decision making and opportunity analysis.

At the completion of the course, it is expected that candidates:

- will have completed a business course containing a body of knowledge which is relevant to immediate and potential opportunities;
will have a recognised qualification which will assist them in developing their careers in business; and
will be equipped with suitable skills necessary to continue with further postgraduate study in business information technology.

**Entrance requirements**

In order to be accepted into this course, applicants should have:

- a recognised undergraduate or postgraduate degree in a discipline other than computing;
and/or
- at least five years significant and relevant industry experience;
and/or
- professional experience in a computing environment.

**Structure**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT402</td>
<td>Introduction to Information Technology</td>
</tr>
<tr>
<td>BT406</td>
<td>Data Base Design and Implementation</td>
</tr>
<tr>
<td>BT411</td>
<td>Systems Platforms and Networking</td>
</tr>
<tr>
<td>BT404</td>
<td>Computer Programming</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>BT405</td>
<td>Information Systems Strategies</td>
</tr>
</tbody>
</table>

**Option 2 — prior experience**

**Objectives**

- to explore the analysis and development processes that are used in industry to construct computing systems;
- to investigate state of the art developments in the computing industry and possible directions in the future;
- to examine group processes in organisations, their interaction with the environment, tasks and structures, and their management implications.

**Entrance requirements**

The course is open to graduates and non-graduates who have significant experience in the computer industry.

**Structure**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT413</td>
<td>Software Engineering Strategies (2 units)</td>
</tr>
<tr>
<td>BT412</td>
<td>Current Issues in System Design</td>
</tr>
<tr>
<td>BT414</td>
<td>Management, Organisation and People</td>
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</table>

**Fees**

The Graduate Certificate in Business Information Technology is a full-time paying course. $5,900.00.

**AO74 Graduate Certificate in Taxation and Finance**

This program is a two semester, part-time course. Offered for the first time in Australia, this unique course will open access to tertiary education to a large number of practising accountants and managers who, until now, have been effectively excluded from tertiary education or have had no involvement in it for some time.

**Course objectives**

It is expected that, at the completion of the course, candidates:

- will be provided with an intensive practical course of study in taxation and finance to better equip them to deal with taxation and finance issues in practice as professional taxation, financial and accounting advisers;
- will have a recognised qualification which will assist them in developing their careers in business; and
- will be equipped with suitable skills necessary to continue with further postgraduate study in taxation and finance.

As candidates will already be established in business careers, it is expected that the key vocational outcomes will arise from better current job performance as well as new opportunities opening in the broader fields of management, accounting, taxation and finance within their current organisations.

**Entrance requirements**

In order to be accepted into this course, applicants must have:

- a recognised undergraduate or postgraduate degree in a discipline other than business and a minimum of four years practical business experience; or
- at least four years practical business experience at middle management level and a good track record as judged by the selection panel.

**Course structure**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>BC410</td>
<td>Introduction to Taxation</td>
</tr>
<tr>
<td>BC411</td>
<td>Taxation Entities, Issues and Planning</td>
</tr>
<tr>
<td>BC412</td>
<td>Introduction to Finance</td>
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<tr>
<td>BC413</td>
<td>Investment Analysis</td>
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</tbody>
</table>

**Fees**

The Graduate Certificate in Taxation and Finance is a full-fee paying course. $3,500.00.

**AO83 Graduate Diploma in Business Administration**

This program is offered for qualified executives or potential executives, who have not undertaken significant studies in the administration/management fields, but in the course of their employment, feel the need for a broader knowledge of this area.

The program gives candidates:

1. a working knowledge of the factors affecting the task of the manager and methods of analysing these factors. Particular emphasis is on the needs of middle-management in both private and public enterprise, to manage in a changing environment;
2. an opportunity to examine and practise problem-solving and decision-making in management situations, which should equip students in any type of business organisation with the ability to develop logical and creative approaches to their jobs.

After completion of the program, candidates will have improved their analytical skills and their effectiveness in dealing with managerial responsibilities. Moreover, participants will have a broader outlook, extending beyond their immediate specialist areas.

**Entrance requirements**

Entrance is open to graduates who hold a degree or diploma or its equivalent. The program is available also to a restricted number of candidates whose position or experience in employment is sufficient indication of their capacity to complete the course.

Admission is determined by a selection committee. In addition to academic achievements selection depends upon maturity, work experience and executive potential. Accordingly, each applicant is invited to attach to the application form a detailed curriculum vitae.

It is expected that most people who gain direct entry to the course should complete the qualification with two years of part-time study, but, in order to continue in the course, students must maintain a satisfactory standard of progress.
Course structure

First year
BC503 Introduction to Financial Management
BE501 Economics
BH501 Administration of Organisational Systems
BM501 Marketing Management 1
BQ504 Quantitative Methods

Second year
BC604 Financial Structures and Policy
BH605 Managing Human Processes
BM601 Marketing Management 2
BM603 Business Policy

The program is an intensive two-year part-time course. All units are compulsory. In the first year, candidates are introduced to current thought in the areas of marketing, economics, finance, organisational psychology and quantitative methods. Candidates must complete all first year units before commencing second year. Second year covers the important areas of marketing strategy (local and international), financial management, human relations and organisational change. These aspects are viewed in the overall light of the final unit, corporate strategy (Business Policy). Thus the emphasis in the second year is on the effective application of knowledge acquired in the first year.

Preclusions

Depending on previous training, candidates may be precluded from some of the first year units and assigned alternative units in their place.

Alternative units

Candidates who are precluded from more than one first-year unit must choose, in consultation with the course convener, an alternative postgraduate unit.

Standards of progress

A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Methods of study and instruction

More than one method of instruction is used, so active participation is essential. Participants work in groups or syndicates to encourage cooperative thought. In addition to classroom time, formal syndicate studies are programmed for each week. During these formal sessions ample opportunity arises for questions and discussion centred about case studies or short papers prepared by staff members for analysis.

The nature of the work schedule usually requires participants to engage in further syndicate work of a less formal nature. A residential weekend seminar is held in the second year of the course.

Timetable

Sessions for both first and second year units have been organised on a block system. All unit sessions will be offered on Monday morning between 8.00am and 10.00am and between 10.30am and 12.30pm. In addition, special seminars and subject seminars may be scheduled for one evening (normally Wednesday) between 6.00 and 9.00.

Fees

The Graduate Diploma in Business Administration is a full-time paying course. $4,500.00.

A087 Graduate Diploma in Business Information Technology

Course objectives

This course is designed as an entry level course for graduates in any discipline who wish to utilize computing skills in their existing profession or who may be contemplating a change in career direction. No prior knowledge of computing will be assumed.

The course aims to assist students whose career aspirations are dependent on obtaining specific skills and knowledge of computing as applied to business.

Specifically the course is aimed at giving students:

- Practical skills in:
  - (i) common business software packages
  - (ii) computer programming
  - (iii) structured analysis
  - (iv) data base management systems
  - (v) data communication
  - (vi) expert system tools.

- Conceptual knowledge about:
  - (i) evaluating systems development tools
  - (ii) choosing appropriate methods of systems development and appropriate processing facilities
  - (iii) solving problems associated with implementing computer and office automation systems
  - (iv) the role of information technology in meeting an organisation's business objectives.

Employment opportunities

The type of work that graduates may be involved in includes:

- (i) liaising between user areas and the computer department (business analyst)
- (ii) analysing and designing information systems
- (iii) programming
- (iv) evaluating software and hardware
- (v) coordinating computer projects
- (vi) administering a computer function within an organisation
- (vii) marketing support for software and hardware suppliers
- (viii) education and training in information technology in schools, the computer industry or the public sector.

Course structure (currently under review)

The course consists of eight (8) semester units. Taken on a part-time basis, the course will consist of two (2) units per semester for four semesters. Taken on a full-time basis, the course will consist of four (4) units per semester for two semesters.

The units are:

Level 1

BT504 Introduction to Information Technology

Level 2

BT506 Information Analysis
BT521 End User Computing
BT522 Business Computing Applications
81523 Systems Analysis 1
BT524 Programming A
BT526 Knowledge Based Systems
BT527 Programming B

Fees

The Graduate Diploma in Business Administration is a full-time paying course. $4,500.00.
In many units part of this time will be taken up in computer laboratories. Students will have access to laboratories outside normal class times.

**Entrance requirements**

Entry is open to graduates who have a degree, diploma or equivalent in any discipline from a recognised university or other institution.

In addition, a small number of places are available to applicants without tertiary qualifications but who have substantial business experience.

**Standards of progress**

A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

**Preclusions**

Candidates may be precluded from attempting a unit in the unlikely event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

**Fees**

Full-time is a HECS paying course. Part-time is a full-fee paying course, $4,400.00.

**AO86 Graduate Diploma in Corporate Finance**

This course is intended to further career prospects for people who are presently employed in, or want to be employed in, the area of corporate finance, but who have undertaken little or no undergraduate study in corporate finance. These people may include, among others:

1. those with undergraduate accounting or business qualifications in which only introductory finance courses were available or chosen;
2. graduates from disciplines such as engineering, law, data processing or other related fields, who have moved, or want to move, into financial management or corporate finance positions.

**Course objectives**

- To provide participants with a broadly-based training in all major aspects of contemporary corporate finance.
- To integrate the associated disciplines encompassed by the corporate finance function (e.g. economics, law, corporate strategy, quantitative methods) with the corporate finance core of the course.
- To improve significantly, specific decision-making and management skills by emphasising the practical application of theoretical concepts developed during the course.

**Entrance requirements**

The course is intended for graduates who have a degree or diploma or who have sufficient professional experience to benefit from it. Entrance is also available to a restricted number of mature-age non-graduates whose position or experience is sufficient indication of their capacity to complete the course.

**Course structure**

The course is organised into an eight unit structure to be completed over two years of part-time study at the rate of two units per semester. In order to continue in the program, candidates must maintain a satisfactory standard of progress.

Consistent with the course objectives of a broad coverage and the integration of related disciplines, there are no elective units offered.

**First year**

**Semester 1**

- BC504 Corporate Financial Management 1
- BC504 Financial Modelling

**Semester 2**

- BC505 Corporate Financial Management 2
- BC605 Investment Management

**Second year**

**Semester 1**

- BC606 Current Developments in Corporate Finance
- BE603 International Finance and Monetary Theory

**Semester 2**

- BE503 Financial Instruments and Markets
- BI502 Legal Aspects of Finance

**Preclusions**

Candidates may be precluded from attempting a unit in the unlikely event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

**Standards of progress**

The following should be read in conjunction with 'Standards of Progress' as a provision applying to Graduate Diploma in Corporate Finance students:

'At least one unit must be passed each semester until all course work is completed, unless a deferment of study is sought and approved.'

**Fees**

The Graduate Diploma in Corporate Finance is a full-fee paying course, $4,200.00.

**AO84 Graduate Diploma in Management Systems**

The Graduate Diploma in Management Systems involves two years part-time study. Classes are conducted in the evening.

**General objectives**

This course is offered to people working in a data processing environment who wish to pursue an advanced course of study and improve their career opportunities.

After completing this course, candidates should be able to:

1. develop their understanding of the application of management systems methodology to the problems of commerce, industry and government;
2. evaluate the changes and advances in the field of computing technology and use sound reasoning to determine the applicability of these developments;
3. fully appreciate the effects of various proposed solutions.

**Course structure**

The course is in two parts, mandatory units and elective units. The compulsory part of the course is concentrated on the 'systems and management' side of data processing. The range of the investigation, analysis, design and development of management systems will form a major part of the
course. Project and operation management is covered in depth to ensure that students have a thorough understanding of how systems can be developed and operated efficiently. The course stresses commercial applications with particular emphasis on the involvement of the eventual users of these systems in the process of their development.

The program is made up of eight units and candidates are required to take these from two groups as follows:

**Group 1**

The following units are compulsory:
- **BT503** Software Engineering Strategies (2 units)
- **BT502** Current Issues in Systems Design
- **BT601** Systems Project Management
- **BT602** Information Systems Management
- **BT603** Management Systems

**Group 2**

Students must take an approved pair of units from this section:
- **BH604** Management, Organisation and People
- **BM602** Strategic Management

or
- **BC503** Introduction to Financial Management
- **BC604** Financial Structures and Policy

The Graduate Diploma in Management Systems forms the first two years of the Master of Business (Info. Tech.). Candidates wishing to proceed to the Master of Business (Info. Tech.) should choose the elective pair:
- **BH604** Management Organisation and People
- **BM602** Strategic Management

**Preclusions**

It is not normal policy to grant preclusions; if however, students have appropriate prior training, they may be allowed to choose other approved units including **BT605** Systems Development Project (2 units).

**Extension seminars**

In addition to normal class contact each student is required to attend up to six three-hour seminars each year of the course. The aim of the seminar program is to present the latest developments and trends in the data processing industry or present specialised topics of particular interest to the computer industry.

**Suitable applicants**

The intake into this course is usually:
- (1) computing professionals progressing past the programmer level into systems analysis and project management;
- (2) systems analysis, consultants and some user department representatives who have had considerable experience in the development of management systems.

**Entrance requirements**

Entry is open to graduates who have a degree, diploma or equivalent from a recognised university or other institution. Graduates from any discipline may apply but applicants are expected to have work experience in a computing environment.

The course is available also to a number of carefully selected candidates without tertiary qualifications or who have substantial computer experience. These comprise only a small percentage of total enrolments.

An information seminar is conducted for short listed candidates prior to entrance to the course. Interviews may be required.

**Fees**

The Graduate Diploma in Management Systems is a full-fee paying course. $4,400.00.

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**AO89 Graduate Diploma in Market Modelling**

The Graduate Diploma in Market Modelling is an important offering to business and government in order to improve workplace performance by:

- increasing the level of skill and knowledge deemed necessary to generate efficient and appropriate information and forecasts,
- providing a basis for developing alternative models that can test the impact of decisions or proposed courses of action,
- improving the ability of graduates to conceptualise market problems and market dynamics,
- recognising the importance of incorporating information and forecasts into the strategic planning process.

There are three broad aims of this course.

a) to develop course participants' skills so that they will be better equipped to perform an evaluation of the dominant environmental factors which affect the markets in which different business organisations operate.

b) to utilise the evaluation of the market and together with the necessary tools and knowledge develop a market model. The model will then be used to obtain appropriately based forecasts for the market parameters considered important by business or government for the short, medium and long run horizons.

c) to be able to take the results obtained in a) and b) above, and prepare the necessary management and technical reports that will allow efficient and effective use of the information obtained.

**Admission requirements**

Course participants will normally be selected from those applicants who possess an undergraduate degree (or its equivalent) from a recognised university or tertiary institution. It is expected that participants will have a minimum of two years relevant work experience subsequent to initially graduating.

In addition, a limited number of places (up to ten per cent) will be made available to persons who do not hold a formal tertiary qualification and who meet minimum standards as may be laid down from time to time by the Faculty of Business. A limited number of places (up to ten per cent) will also be offered to recent graduates who wish to embark on higher degree studies.

Candidates may receive recognition by way of credits for units of structured education and training completed at either tertiary education establishments or in the work place. Recognition of prior learning will have a maximum credit transfer of twenty-five per cent of the course.

**Structure and student workload**

The course structure consists of enabling units in information technology and statistics, a faculty generic core unit in Research Methodology, six core units and one elective unit.

It is anticipated that students wishing to undertake this program will have a background in information technology and statistics at the undergraduate level or through appropriate industry based training. Students who cannot demonstrate introductory knowledge in these areas will be required to undertake formal coursework.

The unit in Research Methodology has been designed to meet the needs of all students proceeding to postgraduate studies. The unit aims to provide students with the basics for pursuing self directed learning.
The core units are designed to provide students with the basic knowledge and skills necessary for developing and applying market models. The elective unit may be chosen from a subset of accredited units from within existing graduate diplomas at Swinburne, graduate studies from other educational institutions or appropriate industry based structured education and training. In general, it will be expected that course participants will choose units from within existing Faculty of Business graduate diplomas.

The program will be structured with the following units:

**Enabling units:**
- Information Technology (eg. BT504 Introduction to Information Technology).
- Quantitative Methods (eg. BQ221 Marketing Data Management or BE225 Economic Techniques for Business or BQ222 Quantitative Management Techniques).

**Core units**
- BE504 The Nature and Characteristics of Markets
- BM501 Marketing Management 1
- BM601 Marketing Research Methods
- BQ507 Market Modelling 2
- BQ607 Market Modelling 2
- BC503 Introduction to Financial Management
- BT506 Information Analysis
- BH507 Organisational Psychology
- BH607 Leadership and Change in Organisations

**Generic core unit:**
- BQ500 Research Methodology

**Plus one elective unit from:**
- BC612 Forecasting and the Planning Process

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**Fees**
The Graduate Diploma in Market Modelling is a full-fee paying course. $4,400.00.

**A085 Graduate Diploma in Organisation Behaviour**

This course is for managers who wish to extend their knowledge of human behaviour within organisations. Most students in this course aspire to, or occupy middle and senior management positions in large or small organisations.

The object of the course is to give candidates:
1. A knowledge of the human factors that affect the task of management, together with a study of available methods for an analysis of these factors;
2. An opportunity to examine and to practise problemsolving and decision-making when handling people in the organisational context;
3. A broadened outlook beyond their immediate area of specialisation.

**Course structure**
The program is an intensive two-year, part-time course. The units (all of which are compulsory) are listed below. The first year introduces candidates to the areas of psychology and interpersonal skills, together with a study of organisation theory.

The second year deals with organisation culture, change, and leadership. These aspects are examined and applied in the overall pattern of organisational strategy.

Because of the integrated nature of the course, students are required to complete all their first year studies before attempting second year.

**First year**
- BH505 The Social Psychology of Organising
- BH506 Group and Interpersonal Psychology

Both these units run for the whole academic year and have a total class time commitment of five hours per week.

**Second year**
- BH606 Culture and Conflict in Organisations
- BH607 Leadership and Change in Organisations

Each unit runs for four hours per week. The first is conducted in first semester only and the second in second semester.

**Entrance requirements**
Entry is open to university or other graduates who hold a degree or diploma, or its equivalent. The program is also available to a restricted number of candidates whose position or experience is sufficient to undertake the course. Admission is determined by a selection committee. In addition to academic achievements, selection depends upon experience and development potential. Accordingly, each applicant is asked to attach to the application form a detailed curriculum vitae. A letter of support from the employer is required at the selection interview.

**Progress during the course**
In order to continue in the course, students must maintain a satisfactory standard of progress. It is expected that most candidates will complete the course within two years of part-time study.

**Methods of learning**
A wide variety of teaching methods is employed ranging from structured lectures or discussion to unstructured experiential type activities. Skills relating to work in groups are stressed and these should be developed by active participation in syndicates.

**Professional institutes**
Graduates of this course are eligible to apply to the Institute of Personnel Management, Australia, for membership of this professional society.

**Timetable**
First year units are taught concurrently over the whole year. Second year units are taken successively on a semester basis. The course is offered on either Wednesday or Friday between 8am and 1pm. Special or syndicate sessions may be scheduled where appropriate. A residential or seminar program in addition to the usual five hours per week is scheduled each year as an integral part of the course.

**Note:** A considerable out-of-class time commitment is a necessary element in this learning experience.

**Fees**
The Graduate Diploma in Organisation Behaviour is a full-fee paying course. $4,400.00.
Masters degrees by course work and minor thesis

A092 Master of Business (Information Technology)

The Master of Business (Information Technology) involves four years part-time study.

**Course objective**

The aim of this course is to provide a formal, structured program, covering the major areas of the broad field known as Information Technology as applied to business, but with the flexibility to allow cross-disciplinary studies within the Swinburne course, i.e. Master of Applied Science (Information Technology) and Master of Engineering (Information Technology) and, where appropriate, special electives to be undertaken at other associated institutions.

This course is intended for career students who aspire to management level positions or in management consulting with software houses or management service organisations.

During the course, students will develop:

- the high level capacity and independent analytical skills necessary to assess the impact of information technology on an organisation, the people in it and its implications for commerce, industry and government;
- the capacity to understand the information technology needs of an organisation, and the ability to manage its selection, introduction and operation within the organisation;
- an understanding of the technology of information processing and its application in technical or management tasks.

In general, graduates will have enhanced skills in developing and applying advanced information technology systems in a wide range of industrial, commercial and public sector applications.

**Course structure**

The Graduate Diploma in Management Systems forms the first two years of the Master of Business (Information Technology). Candidates in that course wishing to proceed to the Master of Business (Information Technology) should choose the elective pair:

- BH604 Management Organisation and People
- BM602 Strategic Management

**First and second years**

Graduate Diploma in Management Systems.

**Third year (Masters course)**

**Semester 1**

- BQ703 Technological Forecasting
- BT708 Technology and Innovation

**Semester 2**

- BT707 Information Technology Effectiveness
- BH707 Management of Strategic Change

**Fourth Year**

- BT802 Project and Thesis

**Admission requirements**

Entrance requirements are as specified for the Graduate Diploma in Management Systems.

For progression from the Graduate Diploma in Management Systems to the third year of the Master of Business course, students would normally be expected to have attained an average of at least credit throughout their Graduate Diploma in Management Systems studies.

Students with honours degrees in business or computer science may be granted advanced standing by exemption from appropriate subjects. Provision is also made for transfer of subject credits to, and from, other cooperating institutions in Melbourne for approved equivalent course content.

A091 Master of Business (Organisation Behaviour)

This is a four-year part-time degree by coursework and minor thesis. The first two years are the same as for the Graduate Diploma in Organisation Behaviour; year three comprises a further four units of coursework and the final year is devoted to the preparation, under supervision, of a minor thesis.

The objectives of the Masters degree are:

- to extend the learning objectives of the graduate diploma into further domains of organisation behaviour and
- to develop the capacity of participants to conduct applied research into behavioural issues in organisations.

**Entrance requirements**

Entry is open to those who have satisfied an appropriate standard the requirements of the Graduate Diploma in Organisation Behaviour (or its equivalent).

Admission is determined by a selection committee and places are limited. The potential for and interest in doing applied research is an important selection criteria.

Accordingly, each applicant is asked to attach to the application form a detailed curriculum vitae and a personal statement.

**Course structure**

**Years one and two**

Graduate Diploma in Organisational Behaviour

**Year three**

- BH708 Processes of Inquiry and Research in Organisation Behaviour 1
- BH709 Processes of Inquiry and Research in Organisation Behaviour 2
- BH710 Processes of Inquiry and Research in Organisation Behaviour 3
- BH711 Processes of Inquiry and Research in Organisation Behaviour 4

These subjects have a generic structure and the content may vary from year to year. The general aim is to develop mastery in the research aspects of the manager's role that concern organisation behaviour.

**Year four**

- BH802 Organisation Research Project and Thesis (under supervision)

**Master of Business Administration (MBA)**

This is a general management program which meets the career needs of organisational leaders now and towards the year 2000.

Participants in the program focus, on responsibility and success in a rapidly changing world, on the need to make proper use of new technologies, on the need to export, and on the skills of people management. In addition they will develop an integrated knowledge of the practical applications of the key business disciplines such as Financial Management, Economics, Information Technology, Marketing and Strategic Planning.

Graduates of this course will be equipped to move rapidly into positions of responsible organisational leadership. They
will provide the professional management needed by all types of organisations in this time of change.

Both senior managers and young executives in the early stages of their careers will benefit from the course.

**An organisation based strategic project**

During the course it is necessary for participants to obtain access and support from the management of an organisation, preferably medium to large, with the course requirement to research and develop a strategic plan. Where this is not possible Swinburne will assist in finding a suitable organisation.

It is expected that organisations in which MBA candidates carry out their projects will gain significant benefits from the analysis of their problems and the development of strategic solutions.

**Choice**

In the full-time MBA an elective unit makes it possible to explore a chosen area in greater depth or to expand into new areas. Together with the strategic project and the elective unit this course offers the combination of a carefully designed learning experience which will enhance performance in the task of general management, and an opportunity for the student to design part of the program to meet particular individual needs.

The degree is taught in two modes:

1. A complete MBA course in one year full-time.
2. A conversion program for holders of the Swinburne Graduate Diploma in Business Administration or its equivalent (in standard and content). This program may be completed in six months full-time or twelve to eighteen months part-time.

**Course structure**

**AO93 Full-time MBA**

**Four days in residence**

To get to know other course members and the teaching staff, to clarify expectations about the course and its themes, to establish working teams, and to consider the key behavioural aspects of organisational life.

Also, BT703 Introduction to Business Software, a five day computer skills program, is held prior to the start of the main semester.

**Term 1 (15 weeks)**

*BB809 Strategic Project Planning (the project equals 4 units and continues throughout the year)*

BH706 Managing People and Organisations

BE701 Economics for Management

BC701 Accounting for Management

BB802 Technology and Management

BM701 Marketing for Management

**Term 2 (15 weeks)**

*BB809 Strategic project (continues)*

BB701 Management of Resources

BT704 Computing for Management

BB801 International Business

BB702 Management of Ideas

BB803 Elective

**Term 3 (10 weeks)**

*BB809 Strategic Project (concludes)*

BB804 Management and Society

BM801 Business Planning and Policy

**AO94 Conversion to MBA from Graduate Diploma — full-time**

**Term 1 (15 weeks)**

BB702 Management of Ideas

BT704 Computing for Management

BB801 International Business

*BB809 Strategic project (Value 4 units. To be completed in seven months.)*

**Term 2 (10 weeks)**

BB804 Management and Society

*BB809 Strategic Project (Concludes)*

**AO95 Conversion to MBA from Graduate Diploma — part-time**

**Term 1 (15 weeks)**

*BB809 Strategic Project (Preparation for project which continues throughout the year and up to 18 months — value 4 units.)*

BB802 Technology and Management

**Term 2 (15 weeks)**

BB702 Management of Ideas

BB801 International Business

*BB809 Strategic Project (continues)*

**Term 3 (10 weeks)**

BB804 Management and Society

*BB809 Strategic Project (continues)*

**A further period of approximately six months.**

*BB809 Strategic Project (completion and report)*

* No subject details exist for this subject. Please contact the course provider for details or see above.

Part-time participation in the MBA is only available by way of this conversion program.

There may be variations to this course structure according to the time of year the program is started and according to the student's academic background.

**Electives**

As part of the full-time one-year MBA, students are required to complete an elective unit.

The program of electives will be designed for each candidate's needs through consultation between the student and staff.

**Entrance requirements**

A degree, or its equivalent from a recognised institution, and normally a minimum of three years appropriate work experience.

Admission is determined by a selection committee who will take into account academic achievements, work history and executive potential. Letters of recommendation from employers and others who have specific knowledge of the candidate's academic or managerial skills are helpful.

**Methods of learning**

Generally each unit requires classes or seminars totalling thirty hours plus individual work or assignments in small groups. There are additional seminars when needed dealing with topics which enhance the unit studies, e.g., research methodology and planning methods, special guest speakers, visits to companies.

In all aspects of the program the key themes of innovation, technology and internationalism are integrated.

**Fees**

This intensive and innovative course is required to meet all costs from the fee of $29,000 for the one year MBA (1994).
Of this, half is due on acceptance into the course, and the remainder at the end of June. For the conversion course for graduate diploma holders, the fee is $13,000.

**AO99 Master of Information Technology**

This course is offered in conjunction with the Faculty of Applied Science.

**Course objective**

The course is designed to provide a framework in which students can pursue at an advanced level particular areas of interest in contemporary information technology. Current areas of specialisation are automated systems development, human-computer interaction, intelligent systems, and software engineering.

Each of the areas of specialisation is intended to suit the needs of recent graduates who wish to pursue advanced studies, and practitioners seeking to update or enhance their knowledge.

**Course structure**

The units of study in the Master of Information Technology course are organised into clusters, which are of three types: Discipline clusters, consisting of four units with a common theme. Complementary clusters, consisting of four units that complement the discipline cluster, previous experience and interests. Units forming a complementary cluster may come from other clusters, the Bachelor of Business (Honours) program, the Bachelor of Applied Science (Honours) program in computer science, or other suitable programs. Research and project clusters, consisting of a major piece of work in the area of the discipline cluster and the submission of a thesis.

For 1994, the following clusters will be offered, subject to adequate demand:

**Discipline clusters**

- Automated Systems Development
- Information Systems Requirements
- Automated Development Methods
- Human-Computer Interaction
- Systems Strategies
- Programming the User Interface
- Interactive Systems Development
- Human-Computer Interaction Project
- Foundations of Intelligent Systems
- Intelligent Systems Applications
- Adaptive Intelligent Systems
- Intelligent Systems Project
- Software Engineering
- The Software Process
- Systems Analysis
- Object-Oriented Design and Programming
- Real-Time Systems
- Advanced Database Technology

**Research/Project Clusters**

- Automated Systems Development Project
- Research Project
- Software Engineering Project

**Duration of the course**

The course will normally be completed through one academic year of full-time study, or two years of part-time study.

Subject to timetabling restrictions, which may vary from semester to semester, students undertaking the course on a part-time basis may enrol initially for two clusters, each to be completed over two years, or alternatively, enrol for one cluster at a time, each to be completed over one year.

**Admission requirements**

To be eligible for selection into the Master of Information Technology course, an applicant will have completed, at an appropriate level of achievement, a graduate diploma in information technology or computer science, or equivalent, or will have completed an honours degree (or equivalent) in information systems or computer science. The requirement for an honours degree may be waived for an applicant able to demonstrate substantial relevant industrial experience.

For progression from the Graduate Diploma in Business Information Technology (AO72), applicants would normally be expected to have achieved an average grade of at least credit throughout the course.

Applicants admitted to the Master of Information Technology course may be granted advanced standing for previous studies at masters level at Swinburne or elsewhere. Such advanced standing would be granted on a case-by-case basis.

**A090 Master of Business (by research)**

**A001 Doctor of Philosophy (by research)**

The Faculty of Business offers full-time and part-time research Master of Business and Doctor of Philosophy programs. Research programs can be carried out in the following discipline areas:

- Accounting
- Business Law
- Business Modelling
- Economics
- Information Systems
- Law
- Marketing
- Organisation Behaviour

Each department has Research Co-ordinators who help prospective candidates to develop innovative projects and arrange appropriate supervision.

**Scholarships**

- Higher Educational Contribution Scheme (HECS) exemption

  Full-time higher degree students will normally receive a HECS exemption scholarship.

- Australian Postgraduate Research Award

  The Australian Research Council (ARC) offers 900 Australian Postgraduate Research Awards (APRAs) a year to postgraduate researchers of exceptional promise.

- Industry Sponsored Scholarships

  The Faculty of Business has been fortunate to obtain a number of scholarships from industry for which its higher degree students can apply.

**Faculty Scholarships**

The Faculty of Business is able to offer scholarships for full-time higher degree students from time to time.

**Applications**

Applicants should note that two to three months should be allowed for a successful application to be evaluated. Additionally, applicants wishing to apply for a postgraduate award must submit their application to the University by 31 October in order to have the candidature finalised by the closing date for these awards.

Prospective candidates in the first instance should contact the Higher Degrees and Research Office, Faculty of Business on 819 8955 from whom copies of the statute for the degree of Doctor of Philosophy and the degree of Master (by research) may be obtained. (Also see final chapter — Procedures and Regulations.)
**Subject details**

**AA312  European Community 2**
Study tour of approximately three weeks to at least two EC countries
Prerequisites: AA102, AA106, AA107
Assessment: continuous
This subject will be offered in 1994 if the pilot study tour of 1993 has been deemed successful.

**Subject aims and descriptions**
This subject is highly recommended for students enrolled for the Double Degree BBus/BA (Italian). It will provide students with an opportunity to examine the application of EC regulation, both from an end-user perspective and from the perspective of third countries such as Australia.

**BB701  Management 2: (Resources)**
Course: MBA
Prerequisites: normally all units taught in the first term of the course. This unit is compulsory (conversion students excepted)

**Subject aims**
The basic objective of this unit is to provide a broad understanding of, and some basic practical skills for, the effective planning, acquisition and control of human, financial material and information resources in an organisation. The technological implications of this unit will be complemented by study of the role of innovation and internationalism. Issues addressed will be seen to draw from, and contribute to, other units in the course.

Specific objectives include:
- to provide an introduction to the process of planning an organisation's needs for all categories of resources;
- to provide an introduction to the methods of acquiring the various resources needed;
- to provide an introduction to the key concepts involved in monitoring, reviewing and controlling the use of resources.

**Subject description**
The unit will emphasise the largely integrated nature of resource management from the point of view of general management.
Planning resource requirements.
Acquiring resources:
- information as a corporate resource;
- human — the nature and role of the personnel function in attracting, retaining and motivating competent employees;
- financial — acquiring an appropriate financial mix including short term long term funds, debt/equity, local and foreign currency etc., mechanics of fund raising, sources of advice etc.;
- what is happening in financial markets now;
- capital investment — approaches to selection of investments in plant and equipment, buildings, R&D and other long term assets;
- materials — sourcing materials, parts and other non capital resources;
- implications of international sourcing of materials, personnel, information, finance and capital assets both for domestic use and in overseas operations;
Controlling resource use: key concepts in control of human, financial and materials resources:
- use of financial and non financial indicators.
- accounting and management reporting systems.

**Texts or references**
Howell, R.A. and Soucy, S.R. Operating Controls in the New Manufacturing Environment, Management Accounting, October 1987, pp. 25-31

**BB8702  Management 3: (Ideas)**
Course: MBA
Prerequisites: normally all units taught in the first term of the course. This unit is compulsory for all students

**Subject aims**
The basic objectives of this unit are to develop an attitude towards business that encourages and supports innovation and creativity as essential components of successful business, and to provide some basic practical skills for the management of ideas within the business. Internationalism and technology will be inherent themes, and the unit will draw on the knowledge gained in other units of the MBA.

Specific objectives include:
- to establish a framework that encourages managers to seek out, encourage and utilise opportunities for creativity and innovation to generate sustainable competitive advantage;
- to examine some of the methods for generating high value-added products (goods or services) through the application of ideas/intellectual skills/creativity;
- to develop the skills and knowledge necessary for managers and their enterprises to respond positively and creatively to changes in their operating environment.

**Subject description**
Topics to be covered include:
- the importance of innovation in business operations:
  - encouragement and management of innovation, new product development, process innovation, and R&D;
- market driven behaviour: making marketable products rather than customary or easily-made products; creation of new markets;
  - building ideas into products: product design quality, production quality control, image, support and service, manufacturing technologies, productivity;
- entrepreneurship and intrapreneurship: new ventures, judgement, risk taking; managing and decision support in an uncertain environment;
- management of innovation: seeking opportunities in a changing environment; adapting management styles and the organisation to fit change and to encourage innovative ideas.
The purpose of this unit is to ensure that managers and prospective managers are aware of the basics of international business operations — exporting, importing, licensing, foreign exchange, and foreign investments, and of the special features of the world economic, social and political environment in which companies function.

The subject aims:
- to provide a framework for international business and for the role of the manager in an international setting;
- to raise awareness of the opportunities in international trade (particularly export) and investment, and to examine some of the obstacles;
- to examine some of the most unusual aspects of the economic environment of the international operator — the world monetary system, foreign exchange markets, multinational organisations, and balance of payments, particularly as they affect Australian exporters.

Subject description
- The basis for international trade.
- The basis for international factor movements.
- Barriers to international business.
- The world monetary system and foreign exchange.
- Balance of payments.
- International reach of trade practices.
- Foreign direct investment.
- Organisation of international operations.
- Export management.
- The role of marketing in economic development.
- Trading with the socialist economies.
- Global marketing management.
- Human resource management.
- Ethics in international business operations.
- Cultural diversity and business operations.
- Special problems of international operations from Australia.

Textbooks

Reference
Tushman, M.L. and Moore, W.L. Readings in the Management of Innovation, Boston: Pitman, 1982

88802 Management 4: (Technology and Management)
Prerequisites: none. This unit is compulsory for all students

Subject aims
The principal aim of this unit is to prepare managers for operating in a business environment in which advancing technology is an increasingly important part of the process of doing business.

Specific objectives include:
- to examine the increasingly important role of technology in the global and national economies and the consequences of this for corporate strategies;
- to provide some basic skills of technology assessment to assist in utilising technology within the organisation and in incorporating technology into corporate strategies;
- to examine the influence of changing technologies on the work environment and to develop ways of minimising adverse influences;
- to manage organisational change.

Subject description
Topics to be covered include:
- the importance of technology in national and global economies: the increase in this importance throughout the twentieth century; technological levels of the Australian economy and some of the reasons for Australia’s comparatively poor performance; government policies for increasing the role of technology in business; implications of this for individual organisations, particularly smaller ones;
- using technology within the organisation: technology life-cycles; differing uses of technology; technological forecasting; sources of technology; strategic place of technology within the business;
- stages of growth in the introduction and application of technology in organisations e.g. Nolan Stages of Growth;
- the influence of technology on corporate culture: introducing new technology into organisations; influence of new information technologies on business practice, management methods and organisational structures;
- the key characteristics of the principal business-related technologies: information technology; microelectronics; materials technology; biotechnology; manufacturing technology;
- relevance of R&D to business success.

Textbooks
Foster, R. Innovation: The Attacker’s Advantage, New York: Summit, 1986
BB804 Management 5: (Management and Society)
Prerequisites: none. This unit is compulsory for all students.

Subject aims
This unit focuses on the international, national and community context in which planning and decision making must take place.

The unit aims to encourage successful and socially responsible management by developing:
- an understanding of the broader social and environmental context of management;
- an awareness of the importance of social legislation and of the philosophy and values underlying it;
- a critical awareness of the traditional assumptions underlying organisational values;
- sensitivity to other value systems including those of other cultures;
- an understanding of the impact of value systems on organisational processes and decision-making;
- an awareness of the moral and ethical dilemmas that confront practising managers.

Subject description
The unit will draw on the experience of participants to examine the values implicit in management practice and organisational structure and to investigate the implications for action of those values. It will seek to locate these values in the broader social and political context of management, and to explore the nature and extent of the responsibilities this creates. Accordingly, the following themes will be addressed:

- Introduction: identifying values implicit in different management styles, goals, etc., and examining their underlying assumptions and theoretical frameworks;
- the context and structure of organisations: social, political, environmental; power and control;
- the rationale for social legislation: conceptual, historical and practical considerations;
- technology and the formation of organisational values: e.g. the impact of information technology, technocratic values, etc.;
- cross-cultural value differences and the implications for international business and trade;
- the challenge of the multi-ethnic work force.

References
Selected articles and extracts will be prescribed. As background reading, the following texts are recommended:

Roszak, T. The Cult for Information. New York: Pantheon, 1986

BC110 Accounting 1
No. of hours per week: three hours
Prerequisite: nil
Instruction: lecture/tutorial
Assessment: examination/mid semester assessment

Subject aims and descriptions
A basic introduction to accounting concepts and the analysis of financial reports.

Accounting theory and practice are examined in an historical cost accounting system. This unit includes the following topics: an introduction to accounting and financial statements; revenue and expenses; cost of sales and inventory valuation; non-current assets and depreciation; liabilities; equity; performance evaluation; analysis and interpretation and cash flow statements.

Textbooks
Student Manual, Swinburne, 1992

References

BC220 Accounting 2
No. of hours per week: three hours
Prerequisite: BC110 Accounting 1
Instruction: lecture/laboratory
Assessment: examination/computerised practice set

The development of the accounting process as an information flow to provide the basis from which management control and decision making stems. The computerised processing of information is examined and a commercial accounting package for microcomputers is used to facilitate the same.

The accounting equation is re-examined in order to prepare the balance sheet and profit and loss statement. The control of cash and debtors is included, as are balance day adjustments, bank reconciliation statements and internal control.

Textbooks
Student Manual, Swinburne, 1993

References
Hoggett, J. and Edwards, L., Accounting in Australia. 2nd ed, Brisbane: John Wiley and Sons, 1990

BB809 Strategic Project — Master of Business Administration
Please contact course provider for details.
BC221 Corporate Accounting
No. of hours per week: three hours
Prerequisite: BC220 Accounting 2
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims
The overall unit objective is to develop in students an ability to think through corporate accounting issues and specifically:
- to develop in students an awareness of the financial accounting function within a company;
- to develop students' problem-solving abilities in the application of the principles of corporate accounting to the solution of practical problems;
- to develop student awareness of contemporary issues in the practice of financial accounting; by reference to actual situations where appropriate;
- to develop students' independent research skills by the assignment of research areas within the course;
- to develop student awareness of the interrelationship between corporate accounting and corporate law.

Subject description
The unit covers the following areas:
- share capital and other forms of finance;
- business combinations, including amalgamations, mergers and takeovers;
- group accounting — particular emphasis on this topic. It includes the preparation of consolidated accounts, equity accounting and joint ventures;
- availability of profits for distribution;
- presentation of financial reports including 5th Schedule and Accounting Standards requirements;
- reconstruction and company liquidation.

Textbooks
Australian Corporations and Securities Legislation, 3rd ed, Accounting/Auditing Statements 1993: ASXPA or ICAA
BC221 Corporate Accounting Student Manual, Swinburne, 1993

References

BC222 Management Accounting 1
No. of hours per week: three hours
Prerequisite: BC110 Accounting 1
Instruction: lecture/tutorial
Assessment: major assignment 25%. final exam 75%

Subject aims
To introduce students to the role of accounting in the planning and decision-making functions of the management process.

Subject description
Topics covered include basic cost concepts, cost-volume-profit analysis, cost allocation issues, budgeting, profitability analysis, and the analysis of costs for decision making. Throughout the unit students will be encouraged to:
- utilise micro-computer based techniques for solving problems;
- focus on the relevance of accounting information to management information needs, and
- to critically evaluate traditional management accounting theory and practise against the contemporary literature on activity-based costing and the new technologies.

Textbook
Hansen, D.R. and Mower, M.M. Management Accounting, 2nd ed, Cincinnati: South-Western, Ohio, 1992

References

BC223 Management Accounting 2
No. of hours per week: three hours
Prerequisites: BC220 Accounting 2 and BC222 Management Accounting 1
Instruction: lecture/tutorial
Assessment: examination/assignment

Management Accounting 2 is a second year semester length unit which is mandatory for students taking the accounting stream.

Subject aims
To understand the characteristics and purposes of the main types of cost systems and how they provide information for costing products and services, for measuring the performance of managers and business segments and for making strategic decisions.

Subject description
Topics covered include job order costing, activity based costing, process costing, standard costing, performance evaluation, transfer pricing, cost of quality programs and strategic cost analysis. The effects of new technologies on the design and use of cost systems are considered throughout the course.

Textbook
Hansen, D.R. and Mower, M. Management Accounting, 2nd ed, Cincinnati: South-Western, Ohio, 1992

Reference

BC224 Financial Management 1
No. of hours per week: three hours
Prerequisites: completion of all core units, and BC220 Accounting 2
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims
The objectives of this unit are:
- to provide students with an understanding of the concepts of corporate finance;
- to develop in students the skills of analysis and evaluation needed to apply the concepts of corporate finance to financial management.

Subject description
The course is structured from the point of view of orientating the student to the fundamentals of managing the financial aspects of a business and covers the following specific topics:
- concepts of valuation;
- evaluation and selection of investment projects;
- cost of capital;
- working capital management;
- sources of finance and financial intermediaries;
- dividend policy;
- financing methods and impact on capital structure;
- financial statement analysis;
- current developments in finance.


Subject aims and description

The objectives of this unit are:

- to examine the development of the theory of accounting and the methodology used by accounting theorists;
- to describe and critically analyse a framework of accounting concepts including assets, liabilities and income;
- to use the methodology and the framework developed in the unit to study some specific issues in financial accounting including deferred tax accounting, various inflation accounting systems, intangibles, accounting standards development and foreign operations.

Although the subject is concerned with theory, considerable use is made of practical problems in parts of the course. These are designed to illustrate the alternative techniques available while the theoretical framework is used to evaluate and choose between the alternatives.

Textbook


References


BC225 Auditing

No. of hours per week: three hours
Prerequisite: students enrolled in this unit are expected to have passed BC221 Corporate Accounting.
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims

The broad objective of this subject is to familiarise students with the underlying concepts, objectives and reporting function of the auditor. The unit deals with both theoretical and practical aspects of auditing. The aim is to integrate the concepts of auditing with practical approaches taken by the auditor to ensure students gain a complete picture of the audit process.

Subject description

Theoretical topics studied include auditing methodology and the formulation of auditing standards; audit independence; audit evidence; the rights, duties and legal liability of auditors; the audit report and the concept of truth and fairness; internal control. The various approaches to the sufficiency of audit evidence; computer audits, internal and management audits and materiality.

References


BC226 Risk Analysis and Finance Theory

No. of hours per week: three hours
Prerequisite: BC224 Financial Management 1

Subject aims

To provide students with an understanding of:
- the concept and sources of corporate risk;
- the need for financial risk management techniques;
- financial instruments available and appropriate to manage different risks;
- evaluating project risk, business acquisitions, mergers and divestitures.

Textbook


Other texts relevant to particular topics to be advised.

BC331 Taxation

No. of hours per week: three hours
Prerequisite: students enrolled in this unit are expected to have passed BC221 Corporate Accounting.
Instruction: lecture/tutorial
Assessment: examination/assessments

Subject aims

The overall course objective is to develop in students an understanding of the Income Tax Assessment Act, 1936, as amended, together with those acts which are complementary to the Assessment Act.

Subject description

Specifically, the course will:
- familiarise students with recent court and Administrative Appeals Tribunal decisions in the area of income taxation;
- develop research skills in students in relation to current and landmark taxation cases;
- introduce students to the complexities of taxation in relation to various taxable entities;
- with the aid of income tax rulings and the aforementioned tax cases, develop in students an understanding of the basic concepts of income, capital, and the rules governing deductions;
- provide for students intending a career in public accounting a basic grounding in taxation law. It is recommended these students also complete BC308 Advanced Taxation.

Topics covered include: the nature of assessable income, capital gains tax, fringe benefits tax, allowable deductions and the provisions relating to companies, partnerships, and individuals.
Textbook
Australian Income Tax Assessment Act 1936, 1993 ed. CCH Australia Ltd.
1993 Australian Master Tax Guide. CCH Australia Ltd.
Lehmann, G. and Coleman, C. Taxation Law in Australia, 2nd ed.,
Sydney: Butterworths, 1991

References
Australian federal Tax Reporter. CCH Australia Ltd.
O'Grady, G.W. and O'Suoke, KJ. Pyren's Manual of the law of
Topical Tax Cases for Australians, North Ryde, N.S.W.; CCH Australia
Ltd., 1991

BC332 Strategic Cost Management
No. of hours per week: three hours
Prerequisite: students enrolled for this unit will be expected to have passed BC222 Management
Accounting.
Instruction: one class
Assessment: to be advised

Subject aims
This is a final year unit designed to develop and integrate, within a strategic framework, the planning, control and
decision-making techniques and skills introduced in management accounting and financial management.

Subject description
The topics explored in this unit are developed within the framework of an analysis of competitive strategy and the
role of strategic management accounting. Through the use of the business case method, traditional approaches to
project planning, product costing, product and customer profitability analysis and performance evaluation are
questioned and alternative contemporary approaches evaluated.

Contemporary developments in manufacturing technology and in the provision of services in the context of an
increased focus on quality, customer service and world best practice in a global market place provide the context for a
critical evaluation of management accounting response to these challenges.

References
Current journals, especially Journal of Cost Management and NAA Management Accounting.
Shenk, J.K. and Gwinderajan, V. Strategic Cost Analysis. Homewood, Ill.: Irwin, 1989

BC333 EDP Auditing
No. of hours per week: three hours
Prerequisite: students enrolled in this unit will be expected to have passed BC225 Auditing.
Instruction: one class
Assessment: examination/assignment

Subject aims and description
This unit presumes familiarity with the subject matter of
BC225 Auditing. It should be most useful for those students
planning to enter the profession.

The objective of the unit is to provide students with an understanding of the principles of the audit of computerised
accounting information systems and the application of statistical and analytical techniques in the audit context.

The topics to be studied include:
- the study of the principles of auditing with specific reference to computerised accounting information
  systems;
- EDP audit techniques;
- statistical sampling techniques;
- analytical review techniques;
- audit related causes for company failures.

The subject makes extensive use of audit oriented software packages.

Textbooks
Weber, R. EDP Auditing
Current journals and articles

BC334 Financial Accounting
No. of hours per week: three hours
Prerequisites: BC221 Corporate Accounting and
BC330 Accounting Theory.
Instruction: one class
Assessment: examination/assignment

This unit is most relevant to students planning to enter (or already in) the employment fields of chartered accounting or
financial accounting in industry.

Subject aims
The aims of Financial Accounting are:
- to study in depth some of the more advanced issues and problems from areas introduced in Corporate Accounting;
- to make students aware of a selection of contemporary financial accounting issues and to study these issues from both theoretical and practical viewpoints;
- to apply the conceptual framework studied in Accounting Theory in evaluation of the abovementioned
  contemporary financial accounting issues.

Subject description
The conceptual framework: accounting information and share prices; aspects of group accounting; accounting for
government enterprises; cash flow accounting; financial forecasts; tax effect accounting; and ethics; international accounting standards; and regulation; and
contemporary financial accounting issues.

The syllabus is flexible to allow new financial accounting issues which gain momentum to replace topics of less
relevance.

References
Various current Exposure Drafts and Standards issued by the
Australian Accounting Research Foundation and the Accounting Standards Review Board

BC335 Financial Management 2
No. of hours per week: three hours
No prerequisites but strongly recommended that students should have completed or be concurrently enrolled in
Instruction: one class
Assessment: examination/assignments

Subject aims and description
The purpose of this unit is to help participants learn how to
manage their money and develop the skills to be better able
to advise others in managing their investments. To
accomplish this purpose it is necessary to learn about the
investment alternatives available today and more important,
to develop a way of thinking about investments that will
remain in the years ahead when new investment opportunities arise as a result of the inevitable changes to our financial system.

More specifically, the course objectives are:
- to acquaint participants with the various avenues for the investment of funds, including shares, fixed-interest securities and property;
- to review the impact of taxation on investment planning;
- to consider the fundamental principles of modern portfolio theory;
- to consider the process of portfolio selection and ongoing investment strategies;
- to review the characteristics of financial futures and options and how they may be used to modify the risk-return profile of investment portfolios.

References

BC336 Advanced Taxation

No. of hours per week: three hours
Prerequisite: BC331 Taxation
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
This unit is a final year unit designed for students who require additional experience of taxation issues. The objective of the unit is to acquaint students with the areas of taxation of practical utility by concentrating on the implications of various taxable entities, in particular, companies, unincorporated entities, trusts, superannuation funds and primary producers. In addition the unit will address in detail, the taxation of capital gains and fringe benefits tax. Students will be expected to develop a research-oriented problem-solving approach to the unit which includes the following specific topics:
- unincorporated entities;
- primary producers;
- trusts, beneficiaries (including children's income);
- superannuation funds;
- companies and dividend imputation;
- current developments in taxation;
- capital gains tax;
- fringe benefits tax;
- administrative provisions;
- tax planning;
- part IVA and tax avoidance;
- international taxation.

References
Australian Tax Cases. North Ryde: CCH Australia Ltd.
Income Tax Assessment Act (1936 as amended)
Lehman, G. and Coleman, C. Taxation Law in Australia. 2nd ed. Sydney: Butterworths, 1991 plus; 1993 supplement

BC400 Accounting Honours

Students should seek advice from the appropriate Accounting staff when formulating their discipline-specific course of study and their research project proposal.
To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit their proposal to the Accounting Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Accounting

This unit is designed to broaden the student’s understanding and awareness of contemporary issues in accounting and to provide the student with an opportunity to undertake in-depth study of the relevant theoretical concepts and techniques in a variety of accounting areas. Attention will be given to the application of accounting developments in different sectors of the local and international economy and to the impact of rapid technological and organisational change on accounting. Issues of current concern in the areas of finance, management accounting, tax, auditing, reporting, behavioural accounting and the profession may be included.
Students will be required, with guidance, to research selected topics and make presentations to the class and to attend and participate fully in a series of seminars conducted by staff.

Accounting Honours Research Project

Students will be required to undertake a substantial research project, with individual and group supervision, on a research topic that is currently being reported and extended in the accounting literature. Topics may be drawn from the areas of management accounting, finance, tax, financial accounting, auditing, accounting theory, corporate reporting and computer accounting. Students will be required to make class presentations at progressive stages in their research and will be required to submit a written dissertation of approximately 15,000 words in length.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of their three-year degree.
Note that entry into the honours year is competitive and the number of places is subject to a quota.

Graduate Certificate units

BC401 Accounting for Management

No. of hours per week: two and a half hours
Prerequisites: nil
Instruction: class discussions
Assessment: four assignments

Subject aims
This is a one semester unit for students in the Graduate Certificate in Business Administration.
The objectives of the unit are:
To develop a manager's ability to understand and apply financial information in making business decisions and assessing the performance of a business.
The unit will aim to produce a more effective user of accounting information. A minimum of technical accounting will be used but emphasis will be placed on understanding sufficient accounting to be aware of the appropriate uses and limitations of information produced by the accounting system.
Subject description
No prior knowledge of accounting is assumed.
Topics include:
• general purpose financial statements;
• financial statement analysis;
• cash flow statements;
• business finance and valuation;
• cost — volume — profit analysis;
• costing products and services;
• information analysis for decision making;
• segment performance evaluation;
• budgeting and profit planning.

Textbook

References
McDonald, R.C., Cooper, R.G. and Astill, EJ. Accounting for the Non Finance Executive. 2nd ed, Auckland, N.Z.: Longman Paul, 1983

BC410 Introduction to Taxation
No. of hours per week: two and a quarter hours
Prerequisites: see Graduate Certificate in Taxation and Finance
Instruction: lectures and class discussion of issues and problems
Assessment: class presentations 10%, assignments 40%, examination 50%

Subject aims
The overall objective is to develop in students an understanding of the Income Tax Assessment Act, 1936, as amended, together with those acts which are complementary to the Assessment Act.
Specifically, the unit will:
• familiarise students with recent Court and Administrative Appeals Tribunal decisions in the area of income taxation;
• develop research skills in students in relation to current and landmark taxation cases; and
• with the aid of income tax rulings and the aforementioned tax cases, develop in students an understanding of the basic concepts of income, capital and rules governing deductions.

A selection of topics including the scheme of the income tax assessment acts, assessable income, statutory inclusions and exclusions in income, source derivation and residency, allowable and specific deductions. (Refer Appendix 1 for further details.)

References
Australian Income Tax Assessment Act 1936, 1994 edtion, CCH Australia Ltd.
Australian Federal Tax Reporter, CCH Australia Ltd.

BC411 Taxation Entities Issues and Planning
No. of hours per week: two and a quarter hours
Prerequisites: see Graduate Certificate in Taxation and Finance
Instruction: lectures and class discussion of issues and problems
Assessment: class presentations 10%, assignments 40%, examination 50%

Subject aims
The objective of the unit is to acquaint students with the areas of taxation of practical utility by concentrating on the taxation implications of various taxable entities, in particular individuals and partnerships, companies, unincorporated entities, trusts, superannuation funds and primary producers. In addition the unit will look at the issues involved in tax planning and current developments in taxation.

Subject description
A selection of topics including the taxation of individuals, partnerships, companies, trusts, primary producers and cooperatives, superannuation, administrative provisions, international taxation, tax planning and recent developments.

References
Australian Federal Tax Reporter, CCH Australia Ltd.

BC412 Introduction to Finance
No. of hours per week: two and a quarter hours
Prerequisite: see Graduate Certificate in Taxation and Finance
Instruction: lectures and class discussion of issues and problems
Assessment: class presentations 20%, assignments 40%, examination 40%

Subject aims
The objectives of this unit are:
• to provide students with an understanding of the concepts of corporate finance; and
• to develop in students the skills of analysis and evaluation needed to apply the concepts of corporate finance to financial management.

Subject description
Various topics including understanding company reports, financial statement analysis, working capital management, fund flow analysis, sources of finance, valuation concepts, cost of capital, financial structures and evaluation of investment projects.

References
Investment Analysis
No. of hours per week: two and a quarter hours
Prerequisites: see Graduate Certificate in Taxation and Finance
Instruction: lectures and discussion of issues and problems
Assessment: class presentations 30%, assignments 30%, examination 40%

Subject aims
The broad objective of this unit is to help participants learn how to manage their money and develop the skills to be better able to advise others in managing their investments. More specifically, the unit objectives are:
- to acquaint participants with the various avenues for the investment of funds, including shares, fixed-interest securities and property;
- to review the impact of taxation on investment planning;
- to consider the fundamental principles of modern portfolio theory;
- to consider the process of portfolio selection and ongoing investment strategies.

Subject description
Various topics including investment and financial planning, role of the stock exchange, investment in shares, fixed interest securities, property investment, tax implications of investment strategies, options and convertible securities, portfolio theory management evaluation and investment advice.

References

Introduction to Financial Management
No. of hours per week: two hours
Prerequisite: nil
Assessment: assignment(s) and examination

A first-year unit in the graduate diploma course in business administration.

Subject aims
The objectives of the unit are firstly to develop the student's ability to understand, interpret and use financial statements as an information source and secondly to develop in the student an understanding of the accounting information system which exists within an organisation for the purpose of supplying relevant and timely information for management decision making.

No prior knowledge of accounting is assumed.

Applicants who have previously studied accounting at a tertiary level or are working as accountants are precluded from taking this unit.

Subject description
Topics include:
- management planning and decision making;
- accounting models and the reporting system;
- basic report analysis and interpretation;
- asset valuation and reporting;
- cost behaviour and classification;
- information and decision making — short and long run;
- performance reporting and evaluation;
- cost behaviour and classification;

References

Corporate Financial Management 1
Subject aims
- to develop an understanding of finance theory and its relationship to the firm;
- to develop an appreciation of the derivation and interpretation of financial statements;
- to examine the investment and financing decisions of the firm emphasising the trade-off between risk and return.

Subject description
Topics include:
- understanding financial statements;
- valuation concepts;
- capital structure;
- the cost of capital;
- capital asset pricing model;
- investment appraisal;
- risk analysis.

Textbook

Corporate Financial Management 2
Prerequisite: students enrolled in this unit are expected to have passed BC504 Corporate Financial Management 1

Subject aims
This unit is designed to develop an understanding of the way in which firms plan and manage their financing and investment strategies.

Subject description

References

Financial Structures and Policy
Prerequisite: a pass or preclusion from BC503 Introduction to Financial Management

Subject aims
The general objective is to develop an understanding of financial theory so that the student can evaluate the firm's investment, financing and dividend decisions in keeping with an objective of maximising shareholder wealth, together with providing students with the means of applying...
analytical techniques to solve a wide variety of problems involving financial decisions.

**Subject description**

In particular, the topic coverage includes:
- financial statement analysis;
- working capital management; concepts of valuation;
- cost of capital;
- sources of finance;
- capital structure and leverage;
- business combinations.

**Textbook**


**References**

Bruce, R., McKern, B., Pollard, I. and Skully, M. Handbook of Australian Corporate Finance. 4th ed, Sydney: Butterworths, 1992


**BC605 Investment Management**

Prerequisites: no formal prerequisites are specified; candidates usually would have completed the first year of the course

**Subject aims**

- to acquaint the student with the various securities and funds available to corporate investment;
- to introduce the use of financial and other information in the evaluation of alternative investment media;
- to consider the selection of an appropriate investment portfolio and the management of that portfolio.

**Textbook**


**References**

Ball, R., Brown, R., Finn, F. and Officer, R. Share Markets — Portfolio Theory. 2nd ed, St. Lucia, Qld.: Univ. of Qld., 1989


Jacob, N.L. and Petiot, R.R. Investments. Homewood, Ill.: Irwin, 1984


**BC606 Current Developments in Corporate Finance**

**Subject aims**

The unit represents a coverage of contemporary issues in the area of corporate finance. Issues are presented by experienced professionals working in the area thus it is very much a pragmatic unit.

**Subject description**

The unit is conducted on a seminar basis with ample opportunity given for interaction with the visiting speakers. Because of the nature of the unit issues considered vary from year to year but the following list indicates topics recently covered:
- borrowing off-shore;
- rating commercial paper;
- foreign exchange management;
- equity raising;
- take-over activity;
- taxation implications for financing;
- regulation;
- competitive advantage;
- financing techniques.

**References**

A selection of articles as detailed each session by the session leader.

**BC612 Forecasting and the Planning Process**

No. of hours per week: two hours

Prerequisites: this is a capstone unit and assumes that students have completed all compulsory units

Assessment: individual tutorial presentation 10%, individual assignments (2 x 10%) 20%, group assignments (2 x 15%) 30%, individual or group project 40%

Instruction: combination of formal lectures, tutorials and practical sessions as required.

Computer laboratory facilities for both micro and mainframe computers will be used during the practical sessions. It is envisaged that from time to time, practitioners will be brought in as guest lecturers for this unit.

**Recognition of prior learning**

The nature of this unit does not permit credit transfer arrangements from other courses.

**Subject aims**

To provide the participant with an opportunity to integrate knowledge gained from the other units taken within the course by giving participants a proper perspective of the role and importance of the modelling and forecasting function of a corporate entity.

To introduce the major concepts and issues involved in the development of a corporate plan and to develop the role of modelling together with the decision making process in the formulation of such a plan.

To allow participants, via a project within a particular industry, to experience the process of corporate planning — from the critical generation of the various forecasts through to the final implementation.

To develop, from the corporate plan, a series of lower level plans e.g. product development plan, capital budgeting plan, using applicable database sources and relevant forecasting methodologies.

**Subject description**

Corporate planning, the basics


**Information requirements**

Management information systems concepts, data base implications, data sources, historic and projections environmental considerations. Application areas

Market analysis, financial modelling, budgeting and technological implications.

**Textbook**

No set text. A selection of readings from the reference material.
Subject aims
The aim of this unit is to develop the student's ability to effectively use accounting information in the management of a business.

More specific objectives include:
- developing a framework of key concepts necessary for the interpretation and use of accounting information;
- developing the student's ability to identify and use relevant information for particular management functions and tasks;
- developing the student's understanding of how accounting information requirements vary with the nature of the business.

This unit will be designed and taught so as to incorporate the MBA's emphasis on the places of innovation, technology and internationalism in business, and will link closely with other units in the MBA.

Subject description
The outline of content below contains both a general outline of content, which can be applied to any organisation, and an indication of how this content will be related to organisations influenced by the themes of technology, innovation and internationalism that underly the MBA program.

General outline of content
Introduction to role of accounting in management and key concepts needed for an understanding of that role — cash flow, revenue, expenses, income, assets, liabilities, accounting reports and financial statements.

- Assessing performance — analysing profitability, liquidity and leverage and their relationship to the nature of the business.
- Cash flow analysis.
- Costing, budgeting and control.
- Information and decision making.
- Management accounting and the new manufacturing environment.

Texts or references

Subject description
This unit introduces students to microeconomic concepts and their application within the framework of the Australian economic and business environment. The course commences with an examination of the role of the contemporary market system in allocating resources and distributing output. This is followed by an examination of the firm's production, costs and revenues in a variety of market situations. The significance of microeconomic concepts for both business and government policy is emphasised throughout the unit.

Textbooks

References

Subject aims
To provide business students with an understanding and appreciation of macroeconomic concepts, issues and policies pertaining to the Australian economy.

Subject description
This unit introduces students to the key macroeconomic concepts, issues and policies. It is descriptive in nature and emphasis is placed on current issues and policies. To fully appreciate the current Australian economic and business environment, some theoretical background is necessary and this is provided in the course by the AD/AS model. This model is applied to issues such as inflation, unemployment and external imbalance and used to demonstrate the impact of government macroeconomic policies (wages, fiscal and monetary) on Australian business and the economy. Within the course students are introduced to the financial markets, financial deregulation and Australia's international business environment.

Textbook
Freeman, M.L. et al., Introduction to Australian Macroeconomics, Hawthorn, Vic.: Swinburne Press, 1992

References
Parkin, K., et al., Macroeconomics, Australian ed, Addison-Wesley, 1992

Subject aims
To introduce key micro-economic concepts and to encourage and assist students to apply economic reasoning to issues facing business, government and consumers.

Subject aims and description
To show the relevance of microeconomic concepts to business decision-making.

This unit touches on topics such as decision-making under conditions of uncertainty, demand analysis with emphasis on demand estimation, cost estimation and cost concepts for
decision making, pricing decisions in theory and practice and the goals of the firm and their influence on decision-making.

**Textbook**

**References**
Pappas, J.L. and Hirschey, M. Managerial Economics. 6th ed, Chicago: Dryden Press. 1990

**BE222**  
**Industry and Government**  
No. of hours per week: three hours  
Prerequisites: **BE110 Microeconomics**  
Instruction: lecture/tutorial  
Assessment: examination/assignment  

**Subject aims and description**  
This unit builds on the material covered in Economics 1A. Students who are contemplating major studies in economics should include this unit and BE201 Managerial Economic Analysis in their courses.

The unit deals with the performance of industry in contemporary economies with special reference to Australia and considers the role of government in these economies. Performance criteria, the nature of the modern corporation (including transnational corporations) and specific approaches to industrial policy and regulation are discussed.

**Textbooks**  
To be advised  

**References**

**BE223**  
**Industrial Relations**  
No. of hours per week: three hours  
Prerequisites: **BE110 Microeconomics**  
Instruction: lecture/tutorial  
Assessment: examination/assignments  

**Subject aims and description**  
This unit aims to equip students with an understanding of the Australian industrial relations systems, with particular emphasis on the Federal and Victorian jurisdictions.

As well as providing a theoretical framework within which the industrial relations systems operate, the unit will address a range of contemporary issues including current federal and state legislative provisions, labour market reforms, trade union issues and the role of management in industrial relations.

Topics to be studied within the unit include:
- industrial conflict;
- the role of the parties — unions, employers, government;
- federal and state arbitral systems;
- wage determination;
- management and industrial relations.

Specific references will be provided at the beginning of the unit, however, the following references will provide useful preliminary reading:

**References**

**BE224**  
**Economic Evaluation**  
No. of hours per week: three hours  
Prerequisite: **BE110 Microeconomics**  
Instruction: one class  
Assessment: examination/assignment  

**Subject aims and description**  
This unit provides students with a sound grasp of basic concepts and techniques of economic evaluation for application in areas such as: a review of the effectiveness of budgetary programs, evaluation of major construction projects and capital equipment acquisition, and cost-effectiveness studies. Emphasis in the unit is on the development of interpretive skills, through awareness and knowledge of important factors entering into the evaluation process and an appreciation of the elements of uncertain and imprecise information.

**Textbook**

**BE225**  
**Economic Techniques for Business**  
This subject is no longer running, take equivalent subject BQ221 Marketing Data Management.

**BE226**  
**Macroeconomic Policy**  
No. of hours per week: three hours  
Prerequisite: **BE220 Microeconomics**  
Instruction: one class  
Assessment: examination/assignment  

**Subject aims and description**  
This is a second year unit which builds on the material covered in BE220 first year Macro unit. The focus of the unit is macroeconomic policy in an applied sense.

The main objectives of the unit are to:
- broaden students' understanding and appreciation of macroeconomic principles, current issues and policy.
- provide students with the necessary skills to evaluate macroeconomic policies.

Specific topics include the measurement of macroeconomic performance, limitations of major aggregate indicators, sources of fluctuations in economic activity, major macroeconomic problems, macro economic management within an open economy.

The course will describe the deficiencies in earlier macroeconomic theories which led to disaffection. But the theories now in vogue and importantly the policies based upon them, have their own limitations which will be explained.

**References**
**BE227 Environmental Economics**  
No. of hours per week: three hours  
Prerequisite: BE110 Microeconomics  
Instruction: one class  
Assessment: examination/assignment

**Subject aims and description**  
The aim of this unit is to familiarise students with the economic techniques that can be applied to the problems of environmental and natural resource management.  
Topics include: the costs and benefits of environmental regulation; the environmental impact of poverty and economic growth; the need for sustainable development; the population problem; the importance of property rights; the management of depletible and renewable natural resources; and the economics of pollution control.

**Textbook**  

**References**  

**BE331 Public Finance**  
No. of hours per week: three hours  
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics  
Instruction: one class  
Assessment: examination/assignment

**Subject aims and description**  
This unit involves an analysis of the economic rationale of government expenditure and revenue raising. A will cover the following topics:
- an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure;
- taxation analysis; criteria for evaluating taxes and commonwealth and state tax systems; analysis of personal and corporate income tax consumption and capital gains and wealth taxes; subsidies to producers and consumers; taxes on the products of production and proposals for reform of the Australian tax system;
- techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

**References**  
Brown, Q.J. and Jackson, P.M. Public Sector Economics. 3rd ed, Oxford: Basil Blackwell, 1986

**BE332 Economic Research**  
No. of hours per week: three hours  
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics  
Instruction: one class  
Assessment: examination/assignments

**Subject aims and description**  
The intention in this unit is to broaden students' familiarity with the nature and scope of research undertaken in economics, and to increase students' ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost-benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

**References**  
There is no single prescribed reference for this course, but extensive use is made of current journal articles

**BE333 Financial Institutions and Monetary Policy**  
No. of hours per week: three hours  
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics  
Instruction: lecture/tutorial  
Assessment: examination/assignment, multiple choice test

**Subject aims**  
To provide students with:
- an up-to-date view of Australian financial intermediaries; their nature and operation in a changing business environment;
- an appreciation and understanding of the application of monetary policy; its origins and current controversies.

This course includes:
- a study of Australian financial intermediaries;
- the process of deregulation and its impacts on financial intermediaries and Reserve Bank policies;
- the role of the Reserve Bank as a prudential supervisor and as a regulator of economic instability;
- the development of monetary policy, current monetary policy controversies and the application and operation of monetary policy.

**Textbooks**  
To be advised

**References**  
The Reserve Bank Bulletin — recent issues

**BE334 International Trade**  
No. of hours per week: three hours  
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics  
Instruction: lecture/tutorial  
Assessment: examination/assignment

**Subject aims and description**  
To encourage students to recognise the importance of international trade to the Australian economy and to equip students to appreciate and evaluate the ways in which government and business can improve Australia's international trade performance.

The subject combines an examination of the nature of economic theory relating to international trade, trade
restrictions and industry policy, with discussion of key international trade issues of importance to the Australian business community and government.

Topics covered include:
- International trade and the Australian economy
  - balance of payments
  - composition and direction of trade
  - Australia's place in world trade.
- The economics of trade and trade restrictions
  - basis of trade and gains from trade
  - explanations of trade patterns
  - trade restrictions — nature, reasons, and effects
  - regional trading blocs
- Improving Australia's international competitiveness
  - industry policy issues (e.g., level playing field debate, microeconomic reform)
  - the business perspective — obstacles and strategies for success
  - the role of government.

References

BE336 Economics of Social Issues
No. of hours per week: three hours
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics
Instruction: lecture/tutorial
Assessment: examination/assignment, multiple choice test/essay

Subject aims and description
This course examines both the uses and limitations of orthodox economic theory in understanding many of the important social, economic and political issues that are current in Australia today. In so doing the course will improve students' understanding of the roles of both business and government in furthering society's objectives.

Issues considered will be drawn from: the distribution of income, wealth and poverty, the incidence of unemployment, and the roles of private enterprise and government in the provision of health-care, education, transport, energy and environmental protection.

The unit endeavours to teach students the theory and principles needed to be able to analyse social issues from an economic perspective.

References
Because of the contemporary nature of the unit no textbook is set. Comprehensive reference lists will be provided.

BE337 Economic Development
This unit will not be offered in 1994.

BE338 Comparative Labour Relations
This unit will not be offered in 1994.

BE339 Comparative Economic Systems
This unit will not be offered in 1994.

BE400 Economics Honours
Students should seek advice from the appropriate Economics staff when formulating their discipline-specific course of study and their research project proposal.

To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit their proposal to the Economics Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Economics
Students will engage in a program of advanced study designed to enhance their ability to apply economic reasoning and economic techniques to issues of importance to business, government and society. The reading and seminar program will broaden and add depth to the student's understanding of significant policy issues and will support the student in carrying out their economics research project.
Applied Economics Honours Research Project

Students will be required to undertake a substantial research project in an area of applied economics. No specific topic is prescribed, rather, students will be encouraged to formulate their own problems and hypothesis. Potential areas for research will reflect expertise within the department which could include international trade and finance, industrial relations, financial institutions and monetary policy and public finance, including the economics of the environment and social issues. Students will be required to make class presentations at progressive stages in their research. The research project will be presented in the form of a written dissertation of approximately 15,000 words in length.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of their three-year degree.

Note that entry into the honours year is competitive and the number of places is subject to a quota.

BE401 Economics for Business

No. of hours per week: two and a quarter hours
Prerequisites: nil
Instruction: class
Assessment: assignment/exam

A major unit in the Graduate Certificate in Business Administration.

Subject aims

To assist students to better interpret, analyse and evaluate economic news items. To actively involve students in the understanding and appreciation of economic issues and policies. To give students a better knowledge of the Australian and international economic environment for business. To provide students with a systematic framework to understand and appreciate current economic issues.

Subject description

The unit consists of twelve two and a quarter hour sessions. These sessions will be divided roughly into a one and a half hour general content based, lecture led, informal discussion session pertaining to a specific course topic and a forty-five minute tutorial. Candidates will be introduced to basic economic concepts applied to the Australian economy, illustrated with items by applying the course content and are welcome to bring relevant articles for discussion. In the tutorial section, time will be allocated for syndicates to work on solving specific problems.

Textbooks

This text covers the lecture content for the course. Students should read each topic prior to the relevant session. Available Swinburne Bookshop: $26

References

A comprehensive list of important references will be provided

BE501 Economics

No prior knowledge of economics is assumed. Applicants who have majored in economics at a tertiary level are advised to enrol for another postgraduate diploma subject. Applicants who have studied economics at secondary level or who finished their course some time ago are enrolled in this subject.

The first half of the course is concerned with industry economics, covering in particular market structure, conduct and performance issues.

In the second half of the course consideration is given to the factors that determine the general level of economic activity and those economic concepts and methods of analysis that bear directly on the management of a firm.

The topics to be covered are drawn from: markets, resource allocation, efficiency and demand; production and costs; pricing and profit; industry economics including public policy aspects; aggregate demand and supply analysis; money and economic activity; employment and unemployment; inflation; monetary, fiscal, balance of payments and prices/incomes policies.

References

A detailed reading guide will be issued at the start of the semester.

BE503 Financial Instruments and Markets

(Graduate Diploma in Corporate Finance)

No. of hours per week: two hours
Prerequisite: nil
Instruction: lecture/discussions
Assessment: assignments/essays/examination/multiple choice tests

Subject aims

To provide students with:
- an understanding of the structure, functioning and development of Australian financial instruments and markets;
- an understanding of financial instruments and their uses in the financial market;
- the process and implications of deregulation for monetary authorities and participants in the market.

Subject description

Financial markets and instruments
- nature and role of financial intermediation
- growth and description of Australian financial intermediaries
- impact of deregulation on the financial environment and on Reserve Bank of Australia's role and policies.

Market issues
- Australian debt markets
- Australian equity markets
- monetary policy in a deregulated market.

References

Reserve Bank of Australia. The Deregulation of Financial Intermediaries. 1991

BE504 The Nature and Characteristics of Markets

No. of hours per week: two hours
Prerequisites: nil
Instruction: one class
Assessment: assignments 50%, final examination 50%
Recognition of prior learning
Credit will be given for a comparable unit successfully completed at the graduate level.

Subject aims
This unit will provide an introduction to aspects of microeconomics which will promote an understanding of the nature and characteristics of markets. Students will become familiar with analytical methods which enable them to evaluate critically the policies and behaviour of households, firms and the government. An understanding of the dominant market factors affecting an organisation is essential to the development of appropriate forecasting techniques.

Subject description
- Introduction to the market system. Basic market theory.
- Demand analysis.
- Production and costs.
- Market structures.
- Public policy.
- Trade and protection.

Textbook
Students are expected to have access to at least one of the following texts:

BE603 International Finance and Monetary Theory
Prerequisite: BE503 Financial Institutions and Markets should be completed or undertaken concurrently

Subject aims
To introduce students to the structure and workings of international financial centres and markets and to provide a study of issues relating to international financial transactions, monetary theory and internal-external management.

Subject description
The following list should be taken as a guide only:

The international financial environment
- current position
- major indicators
- outlook
Australia's external position
- balance of payments
- terms of trade
- external debt
Foreign exchange markets
- exchange rate determination
- fixed versus floating exchange rate mechanisms
- transactions in foreign exchange markets
- foreign exchange risk management

The international financial system
- international financial centres and markets
- international banking

References
Kane, DR. Principles of International Finance. London: Croom Helm, 1988

BE701 Economics for Management
Course: MBA
Prerequisites: none. This unit is compulsory.

Subject aims
The basic objective of this unit is to provide an understanding of economic issues relevant to management and the application of economic concepts to effective decision making.

Specific objectives include:
- to provide an understanding of the economic environment in which business operates;
- to develop skills in interpreting economic reports and policy statements and in evaluating the implications of government policies for managerial decisions;
- to encourage appreciation of the linkages between different economies and the impact of changes in the international economy on specific markets and industries.

Subject description
Topics to be covered include:
Economics and efficiency
- critical economic concepts for management
Management, industry and government
- market structure, conduct and performance
- performance indicators
- policies for improved performance
- government and industry policy
- adapting to structural change

The macroeconomic environment
- key macroeconomic variables
- sources of information on economic performance
- influences on the level of economic activity
- economic fluctuations

The international environment
- trade and capital flows
- the determination of exchange rates
- managing foreign exchange exposure
- international financial markets
- implications of the international economy for managerial decision making.

Texts or References
Economic Roundup. The Treasury, Selected Publications
The Economist
Reserve Bank of Australia (Selected Bulletins and Special Reports)

BH110 Organisations and Management
No. of hours per week: three hours
Prerequisites: nil
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
The objectives of this unit are:
- to enable students to gain an understanding of the nature of organisations, the management functions in relation to strategy, structure and behaviour, and the management roles of planning, decision-making, organising, leading, staffing and controlling;
- to develop students' abilities to apply organisation theory to organisation situations;
to help students better appreciate the context of work and their own roles as organisation members.

In addition to the theoretical material covered in lectures, tutorial exercises are designed to enable students to apply concepts either to situations within their own experience or to relevant business situations. The importance of people in organisations is stressed in these exercises.

Textbooks
To be advised

References
As advised in lectures and tutorials.

BH220 Organisational Behaviour 1
No. of hours per week: three hours for semester one
Prerequisite: BH110 Organisations and Management
Instruction: one class
Assessment: assignments/presentations

Subject aims and description
The major aim of the unit is to give students a sound knowledge and personal understanding of the impact of human behaviour on work in groups and organisations. There is an increasing emphasis in organisations on creating self-managing work teams, and students will be asked to systematically develop competencies in working in group situations. Student experiences both in and out of the class will be used as a starting point for this development. By reflecting on their experience and applying their personal learning students will gain insight into the behaviour of people as individuals and group members within organisational settings. They will be challenged to learn about their own behaviour and their impact on others. Some class sessions may be conducted in the Management Behaviour Laboratory where activities may be recorded for student use. Assessment will be used to complement the student's growing understanding of the subject through the use of both individual and group assignments.

Textbook

BH221 Human Resource Management 1
No. of hours per week: three hours
Prerequisite: BH110 Organisations and Management
Instruction: one class
Assessment: assignments — group and individual, and presentations

Subject aims and description
The human resources of an organisation are one of its major assets and the focus of this unit is on the understanding and management of those resources through the application of appropriate techniques, functions and management approaches. The unit aims to enable students to understand the nature and importance of human resources as an organisational asset and to provide a knowledge of the theories, techniques and approaches to dealing with people-related problems and issues.

The unit covers:
- the nature and importance of human resources in achieving organisational effectiveness;
- HR planning and staffing the organisation;
- basic interviewing and negotiating skills;
- training and developing employees;
- analysing, evaluating and compensating work;
- establishing and maintaining effective employee relations.

This subject may include some class work in the Management Behaviour Laboratory, where activities may be observed and/or recorded. The Code of Ethics requires students to sign a consent document at the beginning of the semester. Any further queries about this matter should be directed to the subject convener.

Textbook

References

BH222 Organisation Design
No. of hours per week: three hours
Prerequisite: BH110 Organisations and Management
Instruction: one class
Assessment: mid term test/group based research project

Subject aims
The aim of the field of study known as organisation design is to create an understanding of what 'good organisation' is for each of a great variety of institutions that are engaged in very different activities on all kinds of scales within contrasting economic, social, political and cultural settings.

Within this context, the unit aims to enable students to identify some of the design choices that can be made and the considerations relevant to these choices; to understand the main problems that arise in designing structures and jobs, and to develop skills in the analysis of practical problems through the use of research and theory of organisation design and involvement in the investigation of at least one organisation.

Subject description
The unit covers five main areas of study.

The contextual dimensions of organisation:
- the external environment;
- goals and effectiveness.

Organisation structure and design:
- the design of jobs and work structures;
- organisation bureaucracy, size and growth;
- organisation technology;
- functional, product and matrix structures.

Design influences on dynamic processes:
- information and control;
- organisational change.

Integrating the total system.

Organisational research.

References
The aim of this course is to enhance the student's sensitivity to an understanding of issues affecting a multicultural workplace.

A number of key concepts such as culture, the meaning of work, and group dynamics will be explored. Immigration policies, pertinent industrial relations issues, recognition of overseas qualifications and other relevant legislation will also be examined.

**Textbooks**

Nil

**References**

Nil

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**BH330 Organisation Behaviour 2**

No. of hours per week: three hours

Prerequisite: BH220 Organisation Behaviour 1

Instruction: one class

Assessment: learning contract and a reflective essay

**Subject aims and description**

OB2 is designed to extend students' knowledge base and personal skills in the field of group and organisational behaviour. The subject departs from traditional formats in that it is student-centred, group-based and active. Study will focus primarily on the OB2 group itself, functioning as an organisation in its own right: its composition, resources, collective skills and patterns of relationships. Apart from participating in discussions and experiential exercises, students will be encouraged to take initiative in designing, implementing and evaluating a personalised learning program through the use of a learning contract.

**Textbooks and references**


Other readings will be given to participants during the course.

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**BH331 Human Resource Management 2**

No. of hours per week: three hours

Prerequisites: BH221 Human Resource Management and at least one other OB unit stage 2

Instruction: one class

Assessment: to be advised

**Subject aims and description**

This is a new unit and it will extend some of the knowledge and skills of HRM 1 with some emphasis on training and development aspects, and major workplace issues and changes.

The unit covers:

- strategic planning and human resources management;
- change and organisational culture;
- workforce planning and adjustment: redundancy, redeployment and career management;
- basic training, coaching and helping skills;
- international human resources management.

This subject may include some class work in the Management Behaviour Laboratory, where activities may be observed and/or recorded. The Code of Ethics requires students to sign a consent document at the beginning of the semester. Any further queries about this matter should be directed to the subject convener.

**Textbook**

No textbook is prescribed for this subject

**References**

A reference list will be provided.

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**BH332 Enterprise Bargaining**

No. of hours per week: three hours

Prerequisites: at least two Stage 2 Organisation Behaviour units, with BE222 Industrial Relations units

Instruction: one three-hour class

Assessment: individual and group assignments

**Subject aims and description**

This new unit, taught for the first time in 1994, is a timely exploration of the emerging practice of enterprise bargaining in Australia.

The unit will:

- examine the rapidly changing industrial context and framework within which enterprise bargaining takes place;
- critically examine the local and overseas experiences in this field to develop models of "best practice";
- develop some of the skills, especially negotiation and consultation skills, required to formulate enterprise agreements;
- provide opportunity for students to plan and develop an enterprise agreement in a simulated or real organisation, and to develop the capacity for judgment which these processes require.

**Textbooks and references**

Owing to the relatively recent occurrence of enterprise bargaining in Australia, no set text is as yet prescribed. Up-to-date articles from varied sources will be recommended throughout the unit.

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**BH333 Managing Quality in Organisations**

No. of hours per week: three hours

Prerequisites: at least three Stage 2 OB/HRM units

Instruction: one three-hour class

Assessment: individual and group assignments and projects

**Subject aims and description**

This new unit will run for the first time in 1994, and is a "capstone" unit which helps integrate much of the material which might have been taken as part of an OB/HRM major or minor.

Recognising that all Australian manufacturing and service industries are needing to increasingly attend to delivering quality outcomes, this unit will:

- develop an understanding of "quality" in the current Australian context, public and private sectors;
- examine recent local and overseas practices in the quality assurance and enhancement field, to develop an understanding of "best practice";
- provide opportunity for students to plan, implement and manage a quality program, using either the classroom as organisation approach, or an actual organisational project.

**Textbooks and references**

Wide reading will be encouraged. No set text has yet been specified.
BH334  Asian Business
Prerequisite: all first year units completed
This unit is an elective subject for the degree course in Business.
Instruction: a range of methods will be used, including: lectures, seminars, industry, and market
place visits in the host country. Travel costs to be borne by students. In 1993 '94 the countries
visited will be Korea and Thailand.
Assessment: to be advised

Subject aims and description
The objective of this course is for students to have a thorough understanding of the culture of a particular
country and of the impact of this on business practices in that country. The country selected may vary from year to
year.
This unit entails students attending lectures at Swinburne University and travelling to a selected Asian country for a
period of approximately 3 weeks. During their stay they will attend lectures at a local university on culture, economics,
marketing and practices relevant to that country. In addition, students will visit a number of factories, and attend seminars
with representatives of important local industries, and other workplaces.
By the end of this unit, students should have:
- acquired knowledge of local customs, values, attitudes and beliefs of Asian and Western countries in general
  and the host country in particular;
- gained at first hand, experience of the host country’s business practices;
- gained a comparative knowledge of business systems and practices used in the host country and Australia.

Textbook
Because of the nature of the unit no textbook is set.

References
Comprehensive reference lists will be provided

BH400  Organisation Behaviour Honours
Students should seek advice from the appropriate Organisation Behaviour staff when formulating their discipline-specific course of study and their research project proposal.

To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit their proposal to the Organisation Behaviour Honours Convenor for approval prior to the commencement of their honours program. Approval for a student’s discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Studies in Organisation Behaviour
Students will undertake one or more coursework units, supervised reading units or other course of study, which will assist them in carrying out their organisation behaviour research project. It is envisaged that many coursework units available from within Swinburne would be suitable to support the research project and/or to broaden the student’s studies in relevant areas.

Organisation Behaviour Honours Research Project
Students will be expected to undertake a research project within the area of organisation behaviour. Suitable research projects might include organisation behaviour case studies within a limited and specified area, such as management practices, strategic planning processes, group dynamics, human resource development, work value studies, and/or cross-cultural organisation behaviour studies. Research projects will be supervised within a group seminar setting. The research project will be presented in the form of a written dissertation of approximately 15,000 words in length.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of
their three-year degree.
Note that entry into the honours year is competitive and the number of places is subject to a quota.

BH401  Managing People
A unit in the Graduate Certificate of Business Administration.

Subject aims and description
The aim of the unit is to:
- employ behavioural science theory to analyse situations involving the management of people at work;
- make distinctions between the processes of people interactions and the content with which they are working;
- develop skills of observation, processing and generalising from personal experience, and apply knowledge gained to practical work problems of managing;
- increase the students’ awareness of self and their impact on others interpersonally and in groups.

Textbooks
To be advised

BH402  Managing Organisations
A subject in the Graduate Certificate in Business Administration.

Subject aims
To help participants identify their preferred ways of understanding organisations and to expand their repertoire of ‘frames’ for analysis and problem solving in their roles as managers.

Subject description
Organisations are explored from the perspectives of:
- structure;
- politics;
- culture;
- human resources.

References
To be advised

BH403  Managing Organisations and People
A major unit in the Graduate Certificate in Business Administration.

Subject aims and description
To help participants identify their preferred ways of understanding organisations and people and to expand their repertoire of ‘frames’ for analysis and problem solving in their roles as managers.

Objectives
To employ behavioural theory as it applies to the analysis of situations involving the management of people at work.
To distinguish between the processes of people interactions and the content with which they are working.
To develop skills of observation and processing from personal experience.
To apply knowledge gained to practical work problems of managing human beings individually and in groups.
To impress awareness of self and predict the likely impact of personal style on others.
To view the employer organisation from three perspectives, as machines, as organisms and as cultures.
To develop an ability to utilise concepts in the analysis of organisational dynamics, and to use these perspectives to better lead and manage change.

**Textbook**

**Reference**

**BH414 Management Organisation and People**
Refer to BH604.

**BH505 The Social Psychology of Organising**
No. of hours per week: two hours
Prerequisites: nil
Instruction: one two-hour class
Assessment: individual and group assignments and presentations

**Subject aims and description**
A first year subject in the graduate diploma course in organisation behaviour.
The subject is concerned with:
- different ways (metaphors) for looking at and thinking about how we organise;
- the interrelationship between behaviour and structure, both conscious and unconscious;
- the individual and collective investigation of the strengths and weaknesses of differing forms of organisation;
- expanding the ability of participants as thinkers and actors within organisations.

**References**

**BH506 Group and Interpersonal Psychology**
No. of hours per week: three hours for two semesters
Assessment: two minor written assignments. There is no written formal examination. Because of the experiential nature of this subject, a minimum 80% attendance is required

This subject is designed for students taking the graduate diploma course in organisation behaviour.

**Subject aims**
The objectives are:
- to introduce psychological concepts and techniques relevant to personal, interpersonal and group behaviour;
- to help participants understand their own perceptions, values and attitudes, and to gain insight into how these may influence behaviour;
- to increase options for behaviour (mainly communications) through learning appropriate skills. Methods used are largely co-operative and practical rather than didactic and theoretical. Active group participation is therefore necessary.

**Subject description**
Semester one will involve students in the study of group processes and their effects on individual and interpersonal processes and relations. Students will approach the study of these phenomena through reading, discussion and experiential learning.
Semester two will build on earlier work. In particular, skills involved in the consultative management of groups and interpersonal relations will be examined. Students will be encouraged to work on 'real life' group and organisational issues that emerge in their own workplaces.

**Textbooks**

**References**
Extensive reading and resources will be given as appropriate

**BH507 Organisational Psychology**
Prerequisite: no prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential

A first-year unit in the graduate diploma courses in business administration and management systems.

**Subject description**
This unit constitutes an examination of organisational problems in the implementation of corporate strategy with particular emphasis on the relationship between strategy, structure, process and people.
The learning experience depends largely on the involvement and experience of the students, who bring knowledge and skill to the task.
The lecturer's role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.
Theoretical models are applied to problems in order to permit impartial analysis of organisational issues.
Experience is also gained in co-operative group preparation of material and presentation to the class.
Theory is applied to real situations through assignments requiring the investigation of an organisation to which the student has access.
The value of theory as a means of expanding the range of a manager's decisions and actions is the basis of this course.

**Textbook**

**References**

**BH604 Management, Organisation and People**

**Subject aims and description**
This unit is taken in the course for the graduate diplomas in accounting and management systems.
The course provides a macro-view of organisations as open systems examining the interfaces and interactions of environment, tasks, technology, structure and people. It then focuses on the psycho-social sub-system, studying individual, interpersonal, group and inter-group processes within the organisational context. The role of the manager in each of these contexts is a recurring and integrating theme. In particular, wherever possible learning is applied to the business and management systems environments
immediately relevant to students. They have the opportunity to contribute by sharing their current and past work experience as a source of material to enrich class activities. Experiential learning methods as well as lecture-discussion and case methods are employed. Considerable supplementary reading is required outside class time.

Assessment is progressive and may include essays, case studies and class presentations.

Topics are chosen from the nature of the organisation; the organisation as an open system; interactions between subsystems and their implications for managers; organisation climate and effectiveness; organisation change and development; inter-group competition and co-operation; managing conflict; group dynamics and team building; group decision-making, synergy vs. groupthink; inter-personal processes and communication; the individual; leadership; motivation, behaviour change and modification; perception; learning; value; personality and individual differences; models of man — behavioural science views.

Students are continually encouraged to analyse newly acquired knowledge to facilitate transfer of their own work situation.

References

BH605 Human Processes and Performance
Prerequisite: BH501 Administration of Organisational Systems

A unit in the graduate diploma course in business administration.

Subject aims and description
The contribution of the behavioural sciences in solving the ‘people’ problems of management are studied so that the student will be better able to interpret psycho-social aspects of organisations, and be equipped for the successful management of people.

- The student is introduced to current ideas of organisation theorists;
- the student is able to use concepts to manage people;
- the student develops skills in communication, leadership and management of change.

After the course, the candidates will have developed increased awareness of human organisational problems and of the impact their personal behaviour has on others.

Class sessions may draw upon lecture-discussions, group experiential exercises, case studies, student presentations.

These are complemented by extensive private reading and practical assignments out of class.

Topics include interpersonal communications, counselling, perception, leadership, teamwork, intra and inter-group processes, conflict management, change management.

Textbooks and references
Details provided at the first session

BH606 Culture and Conflict in Organisations
A second-year subject in the graduate diploma course in organisation behaviour.

Subject aims and description
The subject introduces students to current theory and practice associated with organisation culture as a prelude to managing conflict and change. It examines the fundamental elements and dynamics of organisation culture. Participants are required to analyse an organisation in terms of its culture and assess, given that culture, how conflict and change might be more effectively managed. The unit is tightly sequenced with the following unit Management and Leadership.

Textbooks and references
It is unlikely that a specific text will be prescribed. Participants will be given extensive handouts and these will be used as a basis for class discussion and accompanying experiential activities.

BH607 Leadership and Change in Organisations
A second year subject in the graduate diploma in organisation behaviour.

Subject aims and description
This subject has three specific points of focus:
- leadership and systems theory;
- leadership and psychodynamics;
- leadership and transformation.

It is assumed that leaders need to know about the influences which create change and the processes necessary to produce a transformation rather than a rearrangement. This will be linked to change. Exploration will be made of: static states, disequilibrium, transformation and flow states. Change agent skills will also be explored.

Textbook
As a guide:

BH706 Management 1: (People and Organisations)
Course: MBA
Prerequisites: none. This unit is compulsory

As part of the unit, all candidates must successfully complete an introductory residential seminar of 4 days concerned with the behaviour of people in small groups and providing an orientation to the learning process, the course themes, the staff and expectations of work and outcomes.

Subject aims
Strategic management requires the direction and control of means as well as ends. This unit is concerned with the effective management of the human and organisational means aspect of a strategic plan.

People, their behaviour in organisations, and their management within organisations, are fundamental to the success of any business. The basic objective of this unit is to provide knowledge and practical skills necessary for managing people and a knowledge of the implications of organisational design options. The course will examine how to develop proactive attitudes towards innovation, technology and internationalism in business and organisational structures for the articulation of these attitudes.

Specific objectives include:
- to provide a conceptual framework for the analysis of the behaviour and management of people in organisations;
- to enable students to analyse and understand behaviour and problems of people, both in small groups and in whole organisations;
• to consider organisational design options and their impact on the effective implementation of strategies;
• to place the skills and themes of the MBA into a human and organisational context;
• to develop the skills of managing people.

The unit is designed so that the many facets of the behaviour of people in organisations can be explored without losing sight of the essential interdependence of the sub parts. Within this framework will be included topics such as:
• the concept of organisation design, and its implications for structure, job design and the interface between people, technology, and the organisation;
• the role of management, including: varied leadership styles and their likely consequences, the management of effective work groups, working with the communication process, managing conflict and developing a positive self-image;
• the impact of the local and international environment on Australian business; comparisons with the management of people in other countries and cultures (especially Asian);
• an introduction to the practical role of the personnel function in organisations.

**Texts or references**


**BH708**  
*Processes of Inquiry and Research in Organisational Behaviour, Part 1 (Intercultural Understanding)*

Prerequisites: nil  
Assessment: essay 50% and research project 40%  
Instruction: seminars, presentations, simulations and research

**Subject aims**

To develop within participants an understanding of their cultural identity and how this influences the way they manage and research.

To research 'Australian-ness' as a cultural identity in management using a team based 'inter-view'.

**Subject description**

Drawn from studies in psychology, sociology and social anthropology it provides a starting point for the conceptualisation of cultural identity. Concepts include gender, authority, religion, and race.

**Reference**


**BH709**  
*Processes of Inquiry and Research in Organisational Behaviour, Part 2 (Senior Management Responsibilities)*

Prerequisites: nil  
Assessment: critique of three research based papers 40%, development of questionnaire 40% and test and evaluation of questionnaire 20%  
Instruction: classes, seminars, practice

**Subject aims**

To inquire into the responsibilities of senior management with regard to the strategic direction of their organisation using a personal questionnaire designed by the student.

**Subject description**

The conceptualisation of corporate policy and strategic planning and the development of a testable questionnaire instrument to research these activities with senior managers.

**Reference**


**BH710**  
*Processes of Inquiry and Research in Organisational Behaviour, Part 3 (Organisational Learning)*

Prerequisites: nil  
Assessment: by essay

**Subject aims**

To explore the concept of organisational learning as a dimension of organisational survival, evolution and transformation.

**Subject description**

The "organisation" will be explored as a system capable of adaptation, learning, change, development, resistance, defence and subject to forces of stasis and flux. Qualitative methods of research will be examined as methods suitable to study the organisation as system. For example observation, interviewing, field studies and action research.

**Reference**


**BH711**  
*Processes of Inquiry and Research in Organisational Behaviour, Part 4 (Consultancy in Organisations)*

Prerequisites: nil

**Subject aims**

To explore and understand the role of organisation consultant and the way that organisations manage the process of using consultants.

**Subject disciplines**

Qualitative and "clinical" research methods will be explored in researching the consultation process. Organisational consultants will be invited to present issues to course members and to explore with them their particular methods of consultative work.

**References**

To be provided in class

**BL110**  
*Legal Environment of Business*

No. of hours per week: three hours  
Prerequisites: nil  
Instruction: lecture/tutorial  
Assessment: to be advised

**Subject aims and description**

This unit introduces students to our legal system. The general objectives are:
• to introduce students to basic legal concepts;
• to develop an understanding of the nature and function of law, in particular the interrelationship of law, business and society;
• to introduce students to important areas of business law including company, contract, tort and administrative law.

After an introductory topic on the concepts, techniques and institutions of the Australian legal system, the unit is divided into two major themes. Two case studies on the role of law in promoting business activity are undertaken. These are drawn from contract and company law. Case studies on the role of law in controlling business activity are next undertaken. These are drawn from tort law and regulatory legislation.

Textbook
or

BL220 Contract Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business Instruction: lecture/tutorial Assessment: to be advised

Subject aims and description
The general aim of this unit is to enable students to gain an understanding of the law applicable to agreements, and in particular those negotiated during the course of the establishment, and conduct of businesses. Particular attention is also given to the legal repercussions of concluding an agreement (including the impact of statute) and breaching obligations undertaken.

Textbooks
or
or

References
Acts of Parliament
Goods Act 1958 (Victoria)
Trade Practices Act 1974 (Commonwealth)
Insurance Contracts Act 1984 (Commonwealth)

BL221 Company Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business Instruction: lecture/tutorial Assessment: to be advised
This unit is compulsory for students in the accounting stream; optional for others

Subject aims and description
The intention here is to undertake a comparative analysis of the form of business organisations.
This involves an introduction to partnership and company law.

Textbook

References
Law of Companies in Australia. 2nd ed, North Ryde: CCH, 1986
Guidebook to Australian Company Law 10th ed, North Ryde: CCH, 1988

BL222 Marketing Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business Instruction: lecture/tutorial Assessment: to be advised

Subject aims and description
The unit involves an examination of the legal controls imposed on the manufacturing, labelling, packaging, distribution, promotion, pricing, and retailing of goods and (where applicable) services.
Topics involved in this study are:
• the liability of manufacturers and retailers of goods at common law and under statute; proprietary interests in products; packaging and labelling of goods; advertising and promotion of goods and services; restrictive trade practices.


References
Goods Act 1958 (Vic)
Consumer Affairs Act 1972 (Vic)
Fair Trading Act 1985 (Vic)
Trade Practices Act 1974 (Commonwealth)

BL223 Computer Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business Instruction: lecture/tutorial Assessment: to be advised

Subject aims
The aim of the course is to enable students to critically explore the application of law to computers and information technology.

Subject description
Students will examine the following topics:
• introduction to Australian legal system;
• the computer and society;
• introduction to intellectual property;
• computers and copyright;
• other forms of protection;
• computer crime;
• computer privacy;
• product liability;
• computer contracts;
• trade practices.

Reference

Recommended reading
BL224 Retailing Law
No. of hours per week: Three hours
Prerequisite: BL110 Legal Environment of Business
Instruction: lecture/tutorial
Assessment: To be advised

Subject aims
This unit aims to provide a practical knowledge and awareness of the laws which impinge upon the function of retailing, concentrating upon those areas affecting the day-to-day activities of the business.

Subject description
Topics covered in this unit include the liability of retailers under the laws of contract and negligence, crime and retailing, establishing a retail business, franchising, the retailer and credit, the retailer and safety, trade description and consumer protection laws, and other general rights and duties owed by retailers.

Textbook

References
Goods Act 1958 (Vic)
Consumer Affairs Act 1972 (Vic)
Fair Trading Act 1985 (Vic)
Trade Practices Act 1974 (Cth.)

BL225 Tourism Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business
Instruction: lecture (two hours); tutorial (one hour)
Assessment: to be advised

Subject aims
To introduce the student to areas of law specifically relevant to the tourism and travel industry, and the practical application of such laws. The unit will be of particular use to students undertaking services marketing.

Subject description
Topics covered include contract law, consumer protection, insurance, international conventions for carriers, travel agents, legislation, passport and other travel controls, business structures and business protection.

Textbook

References
Ryan, K.W. International Law in Australia. 2nd ed, Sydney: Law Book Co., 1984
Travel Agents Act 1986 (Vic.)

BL331 International Business Law
No. of hours per week: three hours
Prerequisite: students enrolled in this unit are expected to have passed BL220 Contract Law or BL222 Marketing Law
Instruction: lecture/tutorial
Assessment: to be advised

Subject aims and description
The purpose of the unit is to consider the legal aspects of international business law.

The emphasis of the course is on the following topics:
• introduction to international law concepts;
• basics of international contracts;
• jurisdiction to determine disputes;
• international conventions;
• international treaties;
• international intellectual property.

Textbook

References
Hoylé, M.S.W. The Law of International Trade 22nd ed, Bicester: CCH Editions, 1986

BL332 Employment Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business
Instruction: one class
Assessment: to be advised

Subject aims and description
The general objective is to assess the impact of law upon the relationship of employer and employee. The following matters are analysed in this unit:
• the contract of employment — formation of the contract of employment including discrimination and compulsory unionism, distinguishing an employee from an independent contractor, the terms of the contract of employment, common law remedies for wrongful termination;
• the arbitration system — the structure of the Australian Arbitration System, the constitutional context, the system in operation in settling disputes and making awards, enterprise bargaining;
•
References

BL333 Finance Law
No. of hours per week: three hours
Prerequisite: subjects enrolled in this unit will be expected to have passed BL220 Contract Law
Instruction: class
Assessment: to be advised

Subject aims and description
The object of this unit is to examine the law relating to selected financing and security practices. Areas of study include bills, discount facilities, cheques, fixed and/or floating charges, mortgages and guarantees. A practical approach is taken to the legal issues analysed.

References
No one textbook provides a suitable coverage of all the issues. Course materials and reading texts will be made available to students

BL334 Asian Business Law
No. of hours per week: three hours
Prerequisite: BL110 Legal Environment of Business Instruction: lecture/tutorial
Assessment: to be advised

Subject aims and description
The general objectives of the unit are to introduce students to the legal environment of business in Asia and to develop an understanding of the context of law in Asian countries, particularly the cultural and historical context. The unit will examine the interrelationship between law, business and society in selected Asian countries. It will explore the way the law has been to stimulate economic development. It will concentrate on the process of constitutional development in Asia, in particular, the link between economic development and democratisation in selected Asian societies. Countries studied will include Japan, Korea, Taiwan, China and Indonesia.

References
MacIntyre and Kanishka, The Dynamics of Economic Policy Reform in South East Asia and the South West Pacific, Oxford University Press, 1993
References to specific countries will be made available to students

BL400 Business Law Honours
Students should seek advice from the appropriate Business Law staff when formulating their discipline-specific course of study and their research project proposal.
To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit their proposal to the Business Law Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Studies in European Business Law
The aim of this unit is to develop an understanding of European community law in its social, political and economic context with particular emphasis on implications for business. The specific nature of European community law in comparison with international and national law will be examined, including the institutional structure of the European community and the objectives of the common market. Particular detailed case studies will also be undertaken, with emphasis on a comparative analysis with Australian law.

Business Law Honours Research Project
Students will be expected to undertake a substantial research project in European business law. Students may substitute the European community law research project with an equivalent research project in contract law, marketing and the law or environmental law. Students will be expected to submit their research project in the form of a written dissertation of approximately 15,000 words in length.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of their three-year degree.

Note that entry into the honours year is competitive and the number of places is subject to a quota.

BM110 The Marketing Concept
No. of hours per week: three hours
Prerequisites: nil
Instruction: lecture/tutorial
Assessment: examination, assignments, presentation, class exercise

Subject aims and description
This unit explores basic business and marketing concepts from a variety of perspectives. The objective is the understanding of key concepts upon which to build a framework for the integration of a variety of ideas on business-customer exchanges and the role of the marketing function.

The unit provides common year students with a series of lectures, tutorial exercises and assignments designed to give them an opportunity to explore basic business and marketing concepts from a variety of perspectives. Related issues of concern to not-for-profit organisations are also explored.

Particular emphasis is given to the role marketing plays in the organisation's process of adaption to its environment, relationships between organisations and their clients, and in the formulation of management policies that impact on other functions such as accounting, operations, and research.

At the end of the unit, the successful student will have acquired an understanding of key concepts upon which to build a framework for the integration of a variety of ideas on business-customer exchanges and an understanding of
the role of the marketing function. This understanding of marketing and marketing people will aid in the understanding of other disciplines in the Bachelor or Business as well as providing a strong philosophical foundation for the vocational study of marketing, either as an elective sequence or as part of the Marketing or Economics-Marketing stream.

**Textbooks**


Students are required to purchase 'The Marketing Concept' book, a comprehensive guide to the course, tutorials and assignments.

**References**


Other supporting material will be prescribed when appropriate, in lectures. It is expected that extensive use will be made of the large collection of relevant material in the library — both texts and current journals.

**BM220 Market Behaviour**

No. of hours per week: three hours

Prerequisite: BM110 The Marketing Concept

Instruction: in a course of this nature active participation is essential. The theoretical aspects of consumer behaviour are supplemented by practical problems through the use of case studies and fieldwork exercises.

Assessment: examination/assignments

This unit is a mandatory requirement for the Bachelor of Business (Marketing) and Bachelor of Business (Economics/Marketing). It can be taken as an elective in other courses.

**Subject aims**

The objective of this unit is to study the process of consumer choice. Its determinants and its implications for marketing strategy. At the completion of the unit, students should have acquired an understanding of:

- the process of human decision making, and;
- understand the three main influences on consumer choice:
  - the individual consumer
  - environmental influence
  - market strategy

**Textbook**


**BM221 Marketing Research**

No. of hours per week: three hours

Prerequisites: BM220 Marketing Behaviour and BM222 Marketing Planning and BM220 Marketing Research concurrently, BM221 is a prerequisite for BM222.

Instruction: lecture and tutorial sessions will be interrelated and will be split approximately 50/50. The experience of several guest lecturers will be drawn upon to illustrate practical applications of course material. Additionally, logbooks, project submissions and class presentations will form part of the learning process.

Assessment: examination/assignments

**Subject aims**

This unit is designed to extend the knowledge and skills gained from the prerequisites with particular emphasis on the gathering and analysis of data to provide information required for marketing decisions. It is aimed at those individuals who use marketing research as an aid to better decision-making by giving an insight, via hands-on experience, of how marketing research is carried out.

**Subject description**

Marketing research as an aid to decision-making. Plan a marketing research project. Develop and write a proposal. Secondary and primary research. Collection of information: qualitative and quantitative methods, questionnaire design, sampling. Data analysis: introduction to using computer packages. Writing and presenting a report. Ethical issues in marketing research.

**Textbooks**

To be advised

**BM222 Marketing Planning**

No. of hours per week: three hours

Prerequisite: BM220 Market Behaviour

Instruction: lecture/tutorial

Assessment: examination/assignments

Marketing Strategy is a mandatory unit in the economics-marketing, and marketing streams and an elective unit in the accounting and computing streams.

**Subject aims and description**

The objective of this unit is to examine further marketing concepts at a more complex level, focusing on the marketing planning process as a key tool in an organisation's interaction with the environment.

Specific aims:

- to allow students to consolidate and develop upon the concepts developed in BM110 and BM220;
- to enhance students' capacity to critically analyse business situations from a marketing viewpoint;
- to give the students a working understanding of the methods and concepts of strategy analysis and how these can be applied in practice;
- to expose the students to a systematic approach to the development of marketing strategy; and the program decisions needed to implement the overall marketing strategy;
- to further build students' analytical and communication skills.
Case studies
Case studies and discussion of prescribed articles form a major part of the course. The emphasis on business report writing is continued, with more complex reports required. The major assignment requires critical assessment of the marketing planning process in an organisation.

Framework
The structure and process of marketing planning.
Sources of information in marketing planning.
The external environment analysis: the customer and the industry.
The corporate appraisal.
Analysing tools.
Tools in marketing planning.
Developing marketing objectives.
Marketing programs.
Product, promotion, distribution and price planning.
Marketing challenges in 90's.

Textbooks
Covers, DW, Strategic Marketing. 3rd ed. (Internation), Homewood, ill.: Irwin, 1991
Jain, SC., Marketing Planning and Strategy 3rd ed, Cincinnati: South Western, 1990

Other supporting material will be prescribed when appropriate. It is expected that extensive use will be made of library resources.

BM330 Product Management
No. of hours per week: three hours
Prerequisites: BM221 Marketing Research and BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: to be advised

The course 'Product Management' is a third year unit in the Bachelor of Business undergraduate degree course.

Subject aims
Students enrolling in this subject come prepared with an understanding of basic marketing concepts, from first year studies, that have in turn been enriched at second year level with the subjects Market Behaviour and Marketing Strategy. The objective of this unit is to enable students to apply their marketing knowledge to the specific area of product management. Within this broad unit objective, there are a number of specific objectives. These specific objectives address the unit from the management approach, that is to say, with a lesser emphasis on other approaches such as economic, technical or purely creative. These areas are not ignored but they are treated as contributory disciplines.

Specific aims include:
- to explore the meaning, importance and function of the product management role in business today;
- to examine the range of concept-generating techniques used for new product development;
- to examine the means of evaluating new product ideas;
- to examine the preparation of a product, or product launch plan and its importance as a marketing control tool for new products, product maintenance and product 're-launches';
- to understand the importance of:
  - product positioning within the target marketing process
  - branding
  - packaging

and the importance of successful working relationships with advertising, marketing, research, promotion agencies, etc. in the product management process;
- to understand the importance of successful working relations within the organisation, particularly with sales, production, supply and research and development, in the product development process.

Textbook

BM331 Services Marketing and Management
No. of hours per week: three hours
Prerequisite: BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
The services business is the fastest growing sector nationally as well as globally. This unit explores the major differences between the marketing of services as distinct from product marketing, and aims at providing students with special skills required to develop marketing strategies in service businesses.

Framework
Distinctive aspects of service marketing.
Consumer behaviour in the service industry.
Special implementation problems in the service industry.
Investigating a service industry of your choice (e.g. financial services, hospital services, insurance industry, catering services, etc.).

Reference

BM332 International Marketing
No. of hours per week: three hours
Prerequisite: BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims
The aim of the unit is to introduce the students to the basics of international business, from an Australian point of view. The place of Australia in a global economy is stressed throughout the unit. The increasing need for Australia to be competitive in a changing global economic environment is explored against the political-legal, economic, socio-cultural and technological factors affecting the world in general, and the Pacific Rim in particular.

Specific aims include:
- to provide a framework for international marketing and for the role of the marketer in an international setting;
- to raise awareness of the opportunities in international trade (particularly export) and to examine some of the obstacles;
- to examine some of the most unusual aspects of the economic environment of the international operator;
- to enable students to understand the special nature of international marketing and the social and cultural difference in the international environment that influences its operations.

References
Cateora, P.R. International Marketing. International ed, Homewood, Ill; Irwin, 1990
BM333 Communications Strategy
No. of hours per week: three hours
Prerequisites: BM222 Marketing, Strategy, and BM221 Marketing Research
Instruction: lecture/tutorial
Assessment: examination/assignments

This unit is an elective subject for the degree course in Business.

Subject aims
This is not a course about how to create advertisements. It is not a course in headline writing, television direction, typography, radio production or any of the other wide range of creative skills which contribute to the success of any advertising company.

This unit is about the underlying process of advertising; it is about the principles which are involved in developing sound advertising strategies and effective executions of these strategies.

Subject description
Topics include:
- introduction to advertising;
- the communication process;
- planning the advertising budget;
- inside an advertising agency;
- advertising media issues;
- public relations and publicity;
- sales promotion;
- direct marketing;
- international advertising;
- evaluating advertising effectiveness.

Textbook

References

BM334 Retail Marketing
No. of hours per week: three hours
Prerequisites: BM222 Marketing Strategy and BM221 Marketing Research
Instruction: lecture/tutorial
Assessment: examination/assignments

Retail Marketing is an elective unit in the marketing stream of the Bachelor of Business.

Subject aims
The unit aims to provide an overview of retailing from a management perspective by providing a range of specialist skills not covered in other units but which are particularly relevant to retailing in Australia in the 1990s.

Subject description
Topics include:
- the retail environment in Australia;
- major changes occurring in retailing overseas;
- planning the retail marketing mix;
- the role of research in retailing;
- location decisions;
- the role of the retail buyer;
- retail buyer behaviour;
- merchandising strategies;
- franchising.

Textbooks
To be advised

References
To be advised

BM336 European Business Studies
No. of hours per week: three hours
Prerequisite: BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: examination/assignments

The subject is a third-year marketing elective unit.

Subject aims
The objective of this unit is to enable students to apply their marketing knowledge to date to the West European markets of Britain, France, Germany and Italy, and to do so within the context of the broader European community, Europe in general, and Australia's relative capacity to market products to these regions.

The subject explores the differences and similarities that exist between these cultures and our own by developing a series of national and regional profiles, specifically for Britain, France, Germany and Italy. Students are encouraged to take these profiles and apply them to the overseas marketing of Australian products of export potential to these four European countries.

The emphasis is on understanding the cultural elements of these four European countries as an essential pre-condition to the successful marketing of Australian products to European markets.

Reference

BM400 Marketing Honours

Students should seek advice from the appropriate Marketing staff when formulating their discipline-specific course of study and their research project proposal.

To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.

Students must submit their proposal to the Marketing Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Studies in Marketing

Students will undertake a program of advanced study which will consist of supervised readings and seminar participation which is designed to broaden and add depth to the student's understanding of contemporary marketing issues relevant to Australia and its global competitiveness. Attention will be focused on two areas in particular: the marketing of services and international marketing. The reading and seminar program will support the student in carrying out their marketing research project.

Marketing Honours Research Project

Students will be expected to undertake a substantial research project in either the marketing or services or in international marketing. Potential areas for research will reflect staff expertise within the department and could include market behaviour, marketing strategy and planning, communication, marketing research and business policy. Research projects will be supervised within a group seminar setting and students will be required to participate in class presentations at progressive stages in their research program. Students will
be expected to submit their research project in the form of a written dissertation of approximately 15,000 words in length.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of their three-year degree.

Note that entry into the honours year is competitive and the number of places is subject to a quota.

**BM401 Marketing Management**

Instruction: emphasis is shared between theoretical consideration and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

**Subject aims**
The unit BM401 covers the same body of knowledge and the same approach as the unit BM501 Marketing Management 1 in the Graduate Diploma in Business Administration.

The program introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning, consumer behaviour and approaches to looking for market opportunities.

**Subject description**
Consumer behaviour — consumption and expenditure patterns, the buying process; market segmentation.

**Product/Service policy** — life cycle and adoption process, planning; differentiation, packaging and branding. Pricing policy — cost, demand, resources considerations; competition. The communications mix — advertising; promotion; personal selling. Distribution policy — channel selection; physical distribution. Introduction to marketing strategy.

**Textbooks**

**References**
Current business journals

**BM501 Marketing Management 1**

Prerequisites: nil

Instruction: emphasis is shared between theoretical consideration and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

**Subject aims and description**
The program introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning, consumer behaviour and approaches to looking for market opportunities.

**Course framework**
The main topics include:
- marketing research: costs and benefits, marketing research strategy, evaluation of results;
- international business.

**Textbooks**
Nil

**References**
Topic reference will be given in class for the specific marketing applications covered.

**BM601 Marketing Management 2**

Prerequisites: BM501 Marketing Management 1, BQ504/BQ505 Quantitative Methods, and BE501 Economics

Instruction: particular emphasis is placed upon the use of case studies to complement the lecture material. Students are expected to participate actively throughout the semester, and are required to present both individual and group assignments.

A second-year subject in the Graduate Diploma in Business Administration.

**Subject aims and description**
This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in respect of the marketing concept, the marketing planning process and the elements of the marketing mix. The aim of this unit is therefore to study various issues in marketing with special reference to:
- the fundamentals of marketing research;
- identifying the value of additional information and how this information can be used;
- industrial and services marketing;
- the practical and theoretical issues of international marketing;
- involving the student in practical issues through the use of case studies, assignments and group presentations.

**Course framework**
The main topics include:
- marketing research: costs and benefits, marketing research strategy, evaluation of results;
- international business.

**Textbooks**
Nil

**References**
Topic reference will be given in class for the specific marketing applications covered.

**BM602 Strategic Management**

Prerequisites: nil

A fourth semester subject in the graduate diploma in management systems.

**Subject aims**
The course provides students with an understanding of the management problems involved in developing strategic policies for organisations in both the public and private sectors.

The student is given a practical understanding of how the strategic planning process works, how corporate objectives are developed and how these are translated into strategic plans.

Emphasis is shared between theoretical considerations, the practical problems of case studies and discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementations.

Students are expected to participate actively during the semester and are required to present individual and group presentations.

**Textbooks**
Detail will be provided at the first session

**Reference**
BM603 Business Policy

Prerequisites: because of the nature of this unit, Business Policy is taken in the final semester of the course. Candidates must have completed all of Group A units and two of the Group B units before commencing this

Subject aims
This unit is studied in the context of a dynamic global environment of social and technological change. All basic business skills must be integrated for strategic planning and the other MBA units will thus be utilized.

Specific objectives of this unit are:
1. to introduce the strategic planning process and the range of techniques used in business planning;
2. to develop skills in using a variety of frameworks for making strategic decisions;
3. to emphasise the importance of the current development phase of the industry in which an enterprise operates as a basis for appropriate strategy development;
4. to develop skills in organising for effective business planning and for the implementation of the business planning process.

Topics to be covered include:
- the nature of corporate objectives, hierarchy and conflict of objectives, personal dimensions of objectives, management by objectives;
- analytical frameworks for business planning and their bearing on the content of business plans and the process of planning;
- defining the business, the central strategic issue of 'What business are we in?';
- the search for opportunity including scenario analysis;
- industries and their evolution: competitive advantage;
- planning for entry into new industries and new markets;
- the Business Plan:
  - management expectations of a business plan
  - criteria for an effective plan
  - preparing for business plan
  - defining the business situation
  - establishing the value proposition
  - defining the business strategy and action programs
  - establishing the key processes and tasks
  - establishing monitoring procedures
  - updating of the business plan.

Texts or references
to examine the development of international marketing strategies; to evaluate the pros and cons of customisation versus globalisation;

- to develop export marketing plans and emphasise the differences between a domestic and an export marketing plan.

Subject description
Topics to be covered include:
- the marketing vision: the external environment;
- the strategic marketing planning process;
- market information systems and market research;
- international marketing strategies: global thinking in product, price, distribution and promotional strategies;
- marketing quality and design;
- marketing pull and technology push.

Textbooks

References
(A) Domestic Marketing:

(B) International Marketing:
Cateora, P.R. International Marketing. 7th ed, Homewood, Ill.: Irwin, 1992

BM801 Business Planning
Prerequisites: normally all units in the first three terms of the course. This unit is compulsory (conversion students excepted)

Subject aims
This unit is studied in the context of a dynamic global environment of social and technological change. All basic business skills must be integrated for strategic planning and the other MBA units will thus be utilized.

Specific objectives of this unit are:
- to introduce the strategic planning process and the range of techniques used in business planning;
- to develop skills in using a variety of frameworks for making strategic decisions;
- to emphasise the importance of the current development phase of the industry in which an enterprise operates as a basis for appropriate strategy development;
- to develop skills in organising for effective business planning and for the implementation of the business planning process.

Topics to be covered include:
- the nature of corporate objectives, hierarchy and conflict of objectives, personal dimensions of objectives, management by objectives;
- analytical frameworks for business planning and their bearing on the content of business plans and the process of planning;
- defining the business, the central strategic issue of 'What business are we in?';
- the search for opportunity including scenario analysis;
- industries and their evolution: competitive advantage;
- planning for entry into new industries and new markets;
- the business plan:
  - management expectations of a business plan
  - criteria for an effective plan
  - preparing the business plan
  - defining the business situation
  - establishing the value proposition
  - defining the business strategy and action programs
  - establishing the key processes and tasks
  - establishing monitoring procedures
  - updating of the business plan.

Texts and references
Bogue III, M.C. and Buffalo, E.S. Corporate Strategic Analysis, New York: The Free Press, 1986

BQ110E Quantitative Analysis A (Enabling)
BQ110 Quantitative Analysis A
BQ111 Quantitative Analysis B

No. of hours per week: three hours
Prerequisites: students without appropriate Year 12 mathematics, or its equivalent, must take both BQ110E Quantitative Analysis A (Enabling) consisting of three hours per week for one semester followed by BQ111 Quantitative Analysis A consisting of three hours per week for one semester. Students with the appropriate Year 12 mathematics, or its equivalent, must take the unit BQ111 Quantitative Analysis B consisting of three hours per week for one semester
Instruction: lecture/tutorial
Assessment: BQ110E examinations; BQ110, examination/assignment; BQ111, examination/assignment

Subject aims and description
The content of BQ111 is the same as the combined content of BQ110E+BQ110, but the time allocation differs. The primary purpose of this unit is to ensure that all students attain a higher level of numeracy and are able to develop a method of approach which can be applied in subsequent areas of their course.

The unit will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures required in various disciplines within the Faculty. The unit has distinct business modelling emphasis and is applied in nature with interpretation and presentation forming an integral part of the unit.

Topics covered will normally include the following:
- language and notation;
- linear functions;
Subject aims and description

This unit will provide students with an awareness of a range of many vital business modelling tools. The unit commences by providing students with an overview of forecasting techniques and approaches. Following on from this, the criteria for selection of an appropriate forecasting technique are examined and detailed consideration is given to the first of the three main forecasting categories — predictive forecasting from a time series. These techniques are introduced via case studies based on a variety of product markets. The techniques considered range from the simple non-adaptive averaging methods through to an examination of the need to use more complex approaches. After successfully completing this unit, students will be competent users of the main forecasting techniques. The approach taken in this unit is a practical one and therefore considerable use will be made of PC-based business modelling software packages.

Textbooks


References

Bowers, D.A. An Introduction to Business Cycles and Forecasting, Reading, Mass.: Addison Wesley, 1985


BQ221 Marketing Data Management

No. of hours per week: three hours

Prerequisites: BQ111, BQ110, BQ111

Quantitative Analysis

Instruction: lecture/tutorial

Assessment: individual and syndicate assignments

Subject aims and description

This unit forms an important part of the market analyst's tool kit. The unit has been designed to equip students with the techniques and skills required to access and analyse information relevant to the market research activities of both private and public companies. The approach taken in this unit is a practical one and therefore considerable use will be made of PC-based business modelling software packages. This unit will:

- introduce students to a number of data archives, public access databases and videotext-type information sources;
- develop the necessary skills to access information sources using data management and statistical software on micro-computer and in a mainframe computer environment;
- extend students' knowledge of the statistical methods that are necessary for the analysis of primary and secondary data.

Textbook

Norusis, N.M. SPSS/PC+ Studentware Plus for Business, SPSS Inc., 1991

References


SSDA Catalogue, Social Science Data Archive, Australian National University, 1991


BQ222 Quantitative Management Techniques

Students intending to complete a major or minor in accounting are strongly recommended to include this unit as part of their studies.

No. of hours per week: three hours

Prerequisites: BQ111, BQ110

Quantitative Analysis

Instruction: lecture/tutorial

Assessment: individual and syndicate assignments

Subject aims and description

This unit will provide students with an awareness of a range of business modelling techniques and their application to a variety of accounting and general business problems. As a result of this unit, students will gain an understanding of the inter-relationships between business modelling techniques and the traditional accounting function in an organisation. In addition, this unit will form the basis for a more extensive study of the application of these techniques in subsequent units.

The emphasis of this unit is on the practical solution of specific business problems and, in particular, on the recognition, formulation and interpretation stages of a business modelling solution. In this unit considerable use will be made of PC-based business modelling software packages.

Areas of study will normally include:

- the general problem of resource allocation with an emphasis on linear programming, including an introduction to post-optimality analysis and the determination of transfer prices in a decentralised organisation;
- an introduction to qualitative and predictive business forecasting with particular emphasis on short-term product demand;
- the use of business modelling techniques to manage inventory;
- an introduction to general approaches to planning and decision-making;
- an introduction to quality and control techniques using control charts and acceptance sampling, with applications in auditing.

Textbook


References

Anderson, M.O. and Liwano, R.J. Quantitative Management — An Introduction, 2nd ed, Boston, Mass: Kent, 1986

BQ223  Business Demography  
No. of hours per week: three hours  
Prerequisite: BQ111 Quantitative Analysis B  
(BQ111E + BQ110) Quantitative Analysis A  
Instruction: one class, one laboratory  
Assessment: individual and syndicate assignments  

Subject aims and description  
A substantial number of business problems are related to changes in the population and therefore an understanding of demography is required to understand business markets. This unit consists of an introduction to the basic methods of demographic analysis for human populations, enterprises and industries. The aim of the unit is to explore the market implications of demographic change. The approach taken in this unit is a practical one and therefore considerable use will be made of PC-based business modelling software packages.  
The unit will normally consist of:  
- sources of demographic data;  
- measuring demographic phenomenon; fertility; mortality; internal and international migration;  
- population estimates and projections;  
- cohort analysis;  
- demographics of enterprises and industries: labour force; skills; markets;  
- international demographic trends.  

Textbook  

References  

BQ331  Survey Research Methods  
No. of hours per week: three hours  
Prerequisite: BQ221 Marketing Data Management  
Instruction: one-three hour lecture/laboratory  
Assessment: six survey research tasks, one individual assignment  

Subject aims and description  
This unit is concerned with a detailed examination of three aspects of survey research methodology: computer software used in the data collection, data entry and tabulation of marketing and sound research data collections; sample designs for mail, personal interview and telephone surveys; the analysis of survey data with a particular emphasis on the measurement of attitudes and opinions.  
Software: Microtab – an integrated computer assisted telephone interviewing system with data entry, coding and data analysis functionality. SPSS for Windows.

References  

BQ400  Business Modelling Honours  
Students should seek advice from the appropriate Business Modelling staff when formulating their discipline-specific course of study and their research project proposal.  
To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department. Students must submit their proposal to the Business Modelling Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

Advanced Business Modelling Techniques  
Students will be required to investigate advanced theoretical business modelling techniques which support their research project proposal. In particular, students will be expected to demonstrate their understanding of these techniques by applying them to one or more business modelling case studies and presenting their findings via participation in a seminar program. Students may also be required to analyse specific business case studies, consult textbooks, periodicals and conference proceedings and investigate the use of computer software packages as part of this unit.

Business Modelling Honours Research Project  
Students will be required to undertake a substantial research project utilising business modelling techniques within their chosen area of speciality. The research project may involve the collection and analysis of data, an extension of the student's theoretical knowledge, the use of existing computer software packages or the production of computer software via programming. Students will be expected to report their research activity in the form of a written dissertation of approximately 15,000 words in length and will be required to progressively present their findings as part of a research seminar program.

Students intending to complete their degree with honours
must apply for entry into the honours year by the end of their three-year degree.

Note that entry into the honours year is competitive and the number of places is subject to a quota.

BQ405 Research Methodology

No. of hours per week: three hours
Prerequisites: nil
Instruction: seminar
Assessment: seminar participation

Subject aims and description

The Research Methodology unit aims to equip students with the necessary research skills to conduct research studies for higher degrees. It is designed to facilitate the development of independent learning skills. Students will be presented with research methodologies appropriate to their discipline as well as those most commonly used in other disciplines. Throughout this unit students will make extensive use of library resources.

Research Methodology topics normally covered include:
- Posing research questions and the measurement of concepts:
  - theory perspectives and construction;
  - orienting statements and propositions;
  - value free research;
  - nominal and operational definitions;
  - validity and reliability;
  - the development of indicators;
  - the development of an index.

Library research methods:
- accessing databases e.g.: bibliographic, CD-ROM;
- parliamentary papers and journals;
- ABS data;
- video and audio e.g.: AUDIODISC;
- Gophers and Internet;
- evaluate discipline-specific library research methodology

Qualitative research methods:
- participant observation;
- interviewing;
- group discussions;
- software for analysing text material e.g.: NUDIST.

Survey research methods:
- design options e.g.: personal interview, mail interview, CATI;
- research questions;
- sample design;
- questionnaire construction;
- fieldwork practice;
- coding, data entry and data verification;
- data analysis.

Experimental research methods:
- types of experimental and quasi-experimental design;
- validity and threats.
- Analysis and interpretation of results:
  - preparation for analysis;
  - statistical analysis;
  - correlation, regression, t-tests;
  - Chi-squared and ANOVA;
  - reporting results.

Presenting a project outline and report writing techniques:
- the problem or question and its importance;
- account of related research;
- theoretical perspectives;
- sources of data;
- analysis of data;
- timetabling;
- budgets;
- word processing, desktop publishing and graphics;
- personal presentations and presenting at a conference.

Textbook


BQ504 Quantitative Methods

No. of hours per week: five three-hour seminars per semester over two semesters
Prerequisites: nil
Instruction: seminars and workshops
Assessment: three syndicate assignments and two final exams

Subject aims and description

This unit is designed to give students an understanding of the role of quantitative analysis in the decision-making process. The skills acquired are used in other units of the course as well as giving an appreciation of quantitative techniques via practical applications. User-friendly computer packages are employed throughout the course wherever possible, reflecting their importance and usefulness.

The topics included are: linear programming, forecasting, inventory management, basic statistics, decision theory.

Textbook


Reference


BQ507 Market Modelling 1

No. of hours per week: two hours
Prerequisites: nil
Instruction: lecture/tutorial
Assessment: individual and syndicate assignments

Subject aims

This unit aims to introduce students to the concept of developing models for product demand. Students will be introduced to a range of predictive techniques that may be incorporated into demand models. Evaluation of model outputs will be an important aspect of this unit.

Note that throughout this course, extensive use will be made of computer software packages.

In this unit, a number of case studies based on a variety of product markets will be analysed.

Subject description
- Approaches to modelling and forecasting demand.
- Forecasting model for stationary and non-stationary data.
- Forecast monitoring and aggregation methods.
- Autoregressive and moving average processes.
- Model identification and evaluation.

Textbooks


Handout material

BQ511 Research Methodology

No. of hours per week: two hours
Prerequisites: nil
Instruction: lecture/laboratory
Assessment: individual and syndicate assignments

Subject aims and description

This introductory research methodology unit aims to provide participants with a basic knowledge of the research methods that are necessary for successful market modelling in today's business world. As part of this unit, participants are
expected to make extensive use of library resources and will be required to undertake a minor research project which is of direct relevance to the participant's areas of interest.

Research methodology topics normally covered include:
- posing research questions and the measurement of concepts;
- library research methods;
- types of study:
  - qualitative research methods;
  - survey research methods;
  - experimental research methods;
- analysis and interpretation of results;
- presenting a project outline and report writing techniques.

**Textbook**
Gay, L.R. and Diehl, P.L. Research Methods for Business and Management

**BQ601 Financial Modelling**

**Subject aims and description**
The aim of this unit is to enable students to appreciate, and gain practice in the application of, a range of computer based analysis methods as components of a decision support system.

Throughout the unit, extensive use will be made of computer packages and particular emphasis will be given to current developments in computing that relate to finance and financial management.

**Topic coverage includes:**
- Decision support systems, expert systems, micro-computers and current software developments, financial modelling using languages (e.g. FORESIGHT) and spreadsheets (e.g. LOTUS 1-2-3), graphics, use of expert system shells, public data bases, approaches to risk analysis, evaluation and selection of computing systems.

**References**
Software documentation, user manuals and current journal articles will provide the major reference material for the unit.

**BQ606 Business Demography**

No. of hours per week: two hours
Prerequisites: nil
Instruction: lecture/tutorial
Assessment: individual and syndicate assignments

**Subject aims**
To introduce the basic methods of demographic analysis and to develop an awareness of the marketing implications of demographic data. The demographic characteristics of enterprises will also be examined with the aim of developing regional industry information banks. The course aims to familiarise students to the full range of demographic data produced by the Australian Bureau of Statistics and the statistical bureaus of Australia's major trading partners.

**Subject description**
Sources of demographic data. Measuring demographic phenomenon
- fertility
- mortality
- internal and international migration.
Population estimates and projections.
Cohort analysis.
Demographics of enterprises and industries
- labour force
- skills
- markets.
International demographic trends.
Geodemographic software.
Psychographics.

**Textbooks**

**BQ607 Market Modelling 2**
No. of hours per week: two hours
Prerequisites: nil
Instruction: lecture/tutorial
Assessment: individual and syndicate assignments

**Subject aims**
This unit aims at familiarising course participants with three forecasting techniques which have not been covered in detail previously, namely, the qualitative, causal and Markovian approaches. Emphasis will be on using a range of techniques to build market demand models.

Note that throughout this course, extensive use will be made of computer software packages.

**Subject description**
Incorporating qualitative techniques including delphi, group consensus, grass roots, and historical analogy into demand models.
Causal approaches to forecasting, including a broad range of regression techniques.
Product life-cycle and end user analysis.
Model fitting and evaluation using Markovian and Control Theory.
Strategy development for target planning.

**Textbook**

**BQ702 Computer Aided Management**
Prerequisites: completion of the Graduate Diploma in Management Systems or equivalent

**Subject aims**
Develop skills and knowledge in identifying and modelling real world problems in different areas of management.
Introduce relevant computer techniques relevant to management problems.
Enable students to apply these techniques to realistic problems with focus on business operations, planning and control. Emphasis will be on the interpretation and impact of the solutions.

**Subject description**
Overview and introduction:
- survey of problems inherent in managing computer based information systems;
- focus on operation, planning and control issues of information systems;
- identify situations where computer based management techniques can be applied;
- overview of various current computer based management techniques.

Three topics to be selected from the following according to the needs and interests of students.
Optimisation techniques.
Inventory and manufacturing management.
Simulation.
Computer performance and evaluation.

**Case study**
- Applying techniques to realistic problems.
- Review solutions and impacts.
BT110  Information Technology

No. of hours per week: four hours
Prerequisites: nil
Instruction: lecture, tutorial, laboratory
Assessment: examination/assignment

Subject aims and description
An understanding of Information Technology is essential for a successful career in business (and most other areas of employment). This unit develops an awareness of how computers are used to solve business problems, and gives the student strong practical skills in current microcomputer software.

Objectives:
- to give students a broad understanding of information technology in the business environment;
- to endow students with computer skills which will be of immediate benefit in other units, and of later use in their careers.

Content:
- fundamentals of computing
- microcomputers and large systems
- data communications
- systems development
- data concepts
- structured programming
- word processing
- spreadsheets (Lotus 1-2-3)
- data base (dBASE III+ or IV)
- basic DOS
- windows

Textbooks
To be advised

References
Other current introductory books on information technology
Swinburne-produced guides on word processing, Lotus 1-2-3, and dBASE III+ and DOS

BT220  Data Analysis and Design

No. of hours per week: three and a half hours
Prerequisites: BT110 Information Technology or both BT102 Information Technology 1A and BT103 Information Technology 1B
Instruction: lecture/laboratory
Assessment: examination/assignment

Subject aims and description
This unit extends the basic information technology user skills gained in BT110 to the development of a simple automated personal data base system and retrieval system to solve a well-bounded business problem. Appropriate automated tools will be used to assist in the design and generation of a simple personal enquiry and update system. The emphasis is on gaining an understanding of the problem in its business context, and the need for adequate documentation of the system and management of this data to ensure that the information produced by the data base system is relevant and accurate. Students will use conceptual data analysis methods to produce a logical data model.

References
Courtney, JF; and Paradise, DB. Database Systems for Management. 2nd ed, Homewood: Irwin, 1992

BT221  Business Computing

No. of hours per week: three hours
Prerequisites: BT110 Information Technology or both BT102 Information Technology 1A and BT103 Information Technology 1B
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

Subject aims and description
The unit is specifically for students taking the business computing major or minor or non computing majors. The unit aims to enable students to understand the development process for business systems and to apply techniques to the development of end-user systems. The emphasis moves away from the ‘BT110 Information Technology’ aim of understanding the technology, to an identification and evaluation of the technological solutions which may be applied to business problems. The unit also aims to enhance skills in the verbal and written presentation of system studies. The unit is structured for a study of business computing from the user’s point of view rather than from that of the Information Systems Department.

Hands-on exercises are used to build upon the practical skills gained in first year, with emphasis on the utilisation and evaluation of business packages. Skills previously developed with business software packages will be enhanced and extended.

Textbooks
To be advised

References
A detailed reading guide will be issued for each topic and will include articles from industry journals and newspapers. Also included will be:
Cushing, BE; and Fomney, MB. Accounting Information Systems. 5th ed, Reading, Mass.: Addison Wesley, 1990

BT222  Business Computing Applications

No. of hours per week: three and a half hours
Prerequisite: BT221 Business Computing
Instruction: lecture (one hour), tutorial (one hour) and laboratory (one and a half hours)
Assessment: a major group assignment, one final exam

Subject aims and description
The unit builds on the knowledge and skills developed in Business Computing. The aim is to give students skills and understanding relevant to current business systems. Specifically, typical business systems such as marketing, manufacturing, finance, and human resources systems are examined. High level software solutions to management problems are investigated.

References
To be advised
BT223 Information Systems 1
No. of hours per week: three and a half hours
Prerequisites: BT110 Information Technology or BT102 Information Technology A and BT103 Information Technology B. BT220 Data Analysis and Design must be taken prior to or concurrently with this unit.

Instruction: lecture/laboratory
Assessment: examination/assignment

Subject aims and description
This unit will extend the information technology user skills gained in BT110 and complement the business information analysis and personal data base design skills developed in BT220 to the analysis, design and implementation of a straightforward transaction processing system with more of an emphasis on the procedural aspects. By the end of this unit students should be able to:

- analyse business and organisational information system requirements of limited scope and complexity, e.g., up to a work group or departmental level;
- describe and recommend strategies for developing the computer software components of a solution to such requirements;
- make appropriate use of automated software development tools;
- implement a simple system;
- evaluate the successfulness of a system.

Topics include:
- modelling organisational data
- modelling organisational activities
- setting implementation priorities
- estimation
- database design
- forms, screen and reports design
- process design
- development strategies
- implementation and installation
- evaluation

Reference
Whitten, Bentley and Barlow. Systems, Analysis and Design Methods. 2nd ed. Homewood, Ill.: Irwin, 1989

BT224 Programming 1A
No. of hours per week: four hours
Prerequisites: BT110 Information Technology or both BT102 Information Technology 1A and BT103 Information Technology 1B
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

Subject aims and description
To give students an understanding of the principles and practice of commercial programming.

By the end of the course, the student will be able to:

- describe the programming process, from problem definition through to program testing;
- discuss the principles of structured programming;
- explain the importance and philosophy of testing;
- design a logical structured solution to a problem using various algorithm techniques;
- read, understand, modify, and debug COBOL programs;
- design, write, test, and document attractive, well-structured programs in COBOL.

Topics covered include the following:

- program structure;
- data structure;
- algorithm design;
- data validation;
- arrays and tables;
- sequential files;
- reporting;
- indexed files;
- strings;
- testing.

References
To be advised

BT225 Programming 2
No. of hours per week: four hours
Prerequisite: BT224 Programming 1
Instruction: lecture/laboratory
Assessment: examination/assignments

Subject aims and description
This unit introduces the student to sound software engineering principles through programming in a block structured language (currently C). The emphasis is on developing and maintaining information systems applications using modular techniques.

References
To be advised

BT226 Knowledge Based Systems
No. of hours per week: three and a half
Prerequisites: BT110 Information Technology or both BT102 Information Technology 1A and BT103 Information Technology 1B
Instruction: lecture/laboratory
Assessment: examination/assignments

Subject aims and description
In this unit the students develop and understand of the nature and uses of expert systems in business. The unit involves practical work using expert system building tools.

Topics covered:

- what expert systems are, how they are developed and who is using them;
- how expert systems differ from conventional software programs, human beings who perform tasks expertly and artificial intelligence programs;
- various forms of knowledge representation;
- principles of frame-based systems;
- basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- knowledge base design;
- evolutionary process of knowledge acquisition needed to put expertise into a machine;
- principles of rule based systems and induction systems;
- handling of uncertainty;
- inference;
- use of an expert system shell;
- comparative strengths and weaknesses of existing knowledge engineering tools for end users and professional developers;
- the pitfalls and opportunities that arise from the important need to evaluate artificial expertise;
- computers and natural language;
- introduction to neural networks.

Textbook
By the end of the course, the student will be able to:
- describe the programming process, from problem definition through to program testing;
- discuss the principles of structured programming;
- explain the importance and philosophy of testing;
- design a logical structured solution to a problem using various algorithm techniques;
- read, understand, modify, and debug COBOL programs;
- design, write, test, and document attractive, well-structured programs in COBOL.

Topics covered include the following:
- program structure;
- data structure;
- algorithm design;
- data validation;
- arrays and tables;
- sequential files;
- reporting;
- indexed files;
- strings;
- testing.

References
To be advised

BT331 System Architecture 1
No. of hours per week: three and a half hours
Prerequisites: any two Stage 2 Computing Units
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
This unit concentrates on data communications architectures. In particular, at the completion of this unit, students will be able to:
- demonstrate a sound knowledge of the basic concepts and components involved in data communications;
- demonstrate an understanding of the various technologies used in the electronic office and how office automation can increase the efficiency of knowledge workers;
- demonstrate an understanding of communication protocols and their relation to system performance;
- demonstrate an understanding of the goals and structure of the ISO reference model for computer network protocols;
- show a good knowledge of the data communication services and facilities provided by the common carriers;
- demonstrate an understanding of how data communications benefits an organisation and how this function is managed.

References
To be advised

BT332 System Architecture 2
No. of hours per week: four hours
Prerequisite: BT331 System Architecture 1
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignments

Subject aims and description
This unit concentrates on operating system architectures. In particular, this unit provides a comparison of the operating systems MVS/XA and UNIX after giving students a general introduction to the principles and types of operating systems.

Both UNIX and MVS/XA are discussed from the perspective of how they manage computer systems resources and what sorts of software facilities are provided to users. Students are given both theoretical exercises and practical exercises in the use of MVS/XA and UNIX operating systems.

References
To be advised

BT333 Information Systems 2
No. of hours per week: three and a half hours
Prerequisites: BT220 Data Analysis and Design, and BT223 Information Systems 1
Instruction: lecture/tutorial
Assessment: examination/assignments
Subject aims and description
Information systems which meet the business needs of organisations must be based on a thorough understanding of the information needs (what needs to be known?) and the business processes (what needs to be done?). A number of methods of analysing and documenting this understanding of the organisation are discussed. Several of these are applied to transforming the analysis of business needs to a model for system design.

This unit extends the knowledge of analysis methods gained in BT220 and BT223 and compares and contrasts the various methods so that students will be able to select the most relevant approach.

References
To be advised

BT344 Information Technology Strategies
No. of hours per week: three hours
Prerequisites: any two Stage 2 Computing Units
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
This unit examines the relationship between information technology and its organisational context. Students will study the ways in which information technology can be used for competitive advantage and planning methods which integrate information systems and business strategies. The role of an information system as part of an overall business plan will be examined and associated costs, benefits and risks will be considered.

At the end of the course the student will be able to:
- understand the way that managers think and work and the need for computer systems to improve their effectiveness in decision-making;
- justify the need for careful analysis, risk assessment and control procedures suitable for different system development approaches;
- understand the strategic role of information technology and the need to achieve alignment between IT and corporate strategy.

Topics covered:
- information systems theory;
- decision support systems;
- information systems issues for management;
- information systems planning network;
- the organisational role of end user computing;
- aligning IT with business strategy.

References
To be advised

BT336 Advanced Application Development
No. of hours per week: four hours
Prerequisites: BT220 Data Analysis and Design, BT224 Programming 1
For 1993, as a transition only, BT330 Data Base or equivalent will also be a prerequisite
Instruction: lecture/laboratory
Assessment: assignment

Subject aims and description
This unit provides advanced studies in programming methodologies and will develop knowledge gained in Programming 1B.

BT337 Programming 28
Prerequisite: BT227 Programming 1B
This unit provides advanced studies in programming methodologies and will develop knowledge gained in Programming 1B.

BT400 Information Systems Honours
Students should seek advice from the appropriate Information Systems staff when formulating their discipline-specific course of study and their research project proposal.

To encourage a multi-discipline approach, students may, subject to approval, undertake selected honours-level coursework units from other departments, faculties, or institutions provided that they show the relevance of these coursework units to their proposed area of research. Such arrangements are subject to the student having any necessary prerequisite studies and may be subject to any quotas imposed on these units by the offering department.
Students must submit their proposal to the Information Systems Honours Convenor for approval prior to the commencement of their honours program. Approval for a student's discipline-specific course of study and research project proposal shall be subject to the availability of any necessary resources and the availability of appropriate staff supervision.

**Advanced Studies in Information Systems**
Students will be required to undertake an individual program of advanced study in one or more areas of contemporary information systems theory and practice. Students' individual study programs will be based on a combination of attendance at a series of lectures and/or seminars based on the research interests of staff and postgraduate students in the information systems department and a supervised reading program. Students will be expected to prepare a written report on the results of their particular course of study and will also be required to present their findings in a seminar.

**Information Systems Honours Research Project**
Students will be required to undertake a substantial research project, investigating an aspect of information systems theory or practice, which may be selected to suit the student's preferred area of specialisation. Students will be expected to report their research activity in the form of a written dissertation of approximately 15,000 words in length and will be required to progressively present their findings as part of a research seminar program.

Students intending to complete their degree with honours must apply for entry into the honours year by the end of their three-year degree.

Note that entry into the honours year is competitive and the number of places is subject to a quota.

**BT401 Business Software for PCs**

**Subject aims**
The aim of this unit is to:
- introduce students to PC-based information technology concepts with particular emphasis on decision support systems;
- enable students to appreciate, and gain practice in the application of a range of PC-based analysis methods as a means of providing information for management decision making;
- provide students with skills in the use of PCs that they can utilize in other areas of the course.

**Subject description**
Throughout the unit, extensive use will be made of computer packages and particular emphasis will be given to current developments in computing that relate to financial management.

Topic coverage includes: software and hardware components of decision support systems, spreadsheets, graphics, data bases and evaluation and selection of software.

**References**
Software documentation, user manuals and current journal articles will provide the major reference material for the unit.

**BT402 Introduction to Information Technology**

Prerequisites: prior to beginning this unit students are not expected to have any previous experience with computers or information technology.

**Subject aims and description**
At the end of this unit students will be expected to be able to:
- state in general terms what constitutes information technology and an information system and its applications;
- state the major components of a computer system, how they operate and interact together;
- state the purpose of an operating system and demonstrate a knowledge of the elementary functions of the DOS operating system;
- use a word processing package to prepare documents of a specified standard which can be handed in for assessment;
- state the functions that computers perform in the business world and illustrate these functions with practical examples;
- state the problems associated with manual filing systems and traditional computer systems, illustrate these problems with practical examples and apply this knowledge to a practical situation;
- state the main functions of data base management systems, illustrate these functions using practical examples and apply this knowledge in analysing a practical situation.

**BT403 Business Computing**

**Subject aims and description**
This unit gives students an introduction to the use of computers in business. Students will study many different types of applications ranging from those used by small businesses through to those used by large corporations.

Computer systems discussed will range from microcomputers through to mainframe computers. During the course, students will solve simple business problems with the aid of a spreadsheet package on a microcomputer. Students will also be exposed to a number of analysis skills used in building information systems. The unit concludes with a discussion of the social implications of introducing new information technology.

At the end of this unit, students will be able to:
- describe a variety of applications used by business
- identify the type of problems to which spreadsheets should be applied and use such a package to solve simple business problems
- describe how computers are used in large organisations, including centralised processors, distributed systems and networked PCs
- understand basic communications terminology and describe some currently used communication services and products
- describe alternative methods of systems development and means of obtaining information for analysis of requirements
- understand the social implications of computerisation.

**Textbooks**
To be advised

**Reference**
BT404  Computer Programming

Subject aims and description
To give students an understanding of the principles and practice of commercial programming.
By the end of the course, the student will be able to:
- describe the programming process, from problem definition through to program testing;
- discuss the principles of structured programming;
- explain the importance and philosophy of testing;
- design a logical structured solution to a problem using various algorithm techniques;
- read, understand, modify, and debug COBOL programs;
- design, write, test, and document attractive, well-structured programs in COBOL.

Topics covered include the following:
- program structure;
- data structure;
- algorithm design;
- data validation;
- arrays and tables;
- sequential files;
- reporting;
- indexed files;
- strings;
- testing.

Textbook

References

BT405  Information Systems Strategies

Subject description
The aim of this unit is to provide students with a thorough understanding of the varying information needs of an organisation and the various methods which are appropriate to meet those needs.

Particular emphasis will be placed on the need to understand the data available in and to an organisation and how it can be used to provide relevant information reliably and efficiently.

Subject aims
The aim of this unit is to enable the student to understand the significant impact that information systems may have on an organisation strategically, tactically and operationally.

Students will be able to:
- know the processes by which these changes may be managed.

Topics covered include:
- types of decisions, types of information;
- types of information systems, transaction processing, management information systems, executive information systems, decision support systems, expert systems;
- retrieving data, processing and presenting it — SQL;
- networks — centralised, decentralised distributed processing;
- strategic and tactical issues of networks and EDI;
- developing an information strategy including the use of modelling;
- managing end user computing;
- internal controls and security; crime, fraud, theft, piracy and sabotage;
- improving, refurbishing, redeveloping, existing systems

References

BT406  Data Base Design and Implementation

Subject description
This unit is very much a hands-on unit. Students will get the opportunity of using the relational DBMS, Oracle, and associated query languages.

The major aim is to prepare students to be productive in projects involving relational database applications.

After completing this unit successfully, students should:
- be able to develop a data model for a small application;
- be able to explain the advantages and disadvantages of the database as opposed to the traditional file approach of data processing;
- be able to use SQL with confidence to define, load and access data in relational databases;
- understand the need for normalisation of data;
- differentiate between logical and physical data independence;
- understand the strategies used in implementing a database management system.

References

BT407  Technology and Change

Subject description
The aim of this unit is to enable the student to understand the significant impact that information systems may have on an organisation strategically, tactically and operationally.
Students will be able to know the processes by which these changes may be managed.

Topics include:
- approaches to information systems planning;
- understanding corporate culture;
- impact of IT on management;
- evolving systems development approaches;
- planning strategies;
- project selection including project estimation and cost benefit analysis;
- project management — team building, training, change-over;
- ergonomic issues — hardware, software, people;
• managing the use of IT
• improving productivity through IT

References

BT412 Current Issues in Systems Designs
Refer BT502.

BT413 Software Engineering Strategies
Refer BT503.

BT502 Current Issues in Systems Design
This unit is equal to two semester units
Prerequisite: BT501 Systems Analysis and Design

Subject aims
In this unit, some of the most recent developments and trends in computer applications and technologies are examined to:
• encourage students to appraise critically the state of the art developments and evaluate them for relevance to their own environment;
• communicate recent systems design techniques;
• provide an awareness of the anticipated directions within the computer industry.

Subject description
Topics covered include:
• systems analysis and design for the fourth and fifth generation systems;
• prototyping strategies;
• integrating personal and corporate computing;
• knowledge based systems.

References
In addition to numerous periodicals and journals, the following texts serve as a guide:

BT503 Software Engineering Strategies
A one-semester subject in the graduate diploma course in management systems. This unit is equal to two semester units.

Subject aims
The subject is intended to develop a formal awareness of the processes of analysing and developing systems while at the same time emphasising the necessary communications skills for success.

Subject description
The tools, techniques and methodologies for both analysing and designing an information system are covered to assist students in:
• further understanding the system development process;
• acquiring and understanding of data modelling,
data analysis,
structured analysis,
use of CASE tools,
database planning, design and implementation;
• develop an understanding of information concepts with a view to efficient software design;
• evaluating the effectiveness of computerised information systems.
The development of techniques for successful communication with both users and other computing professionals:
• written skills of report writing and essays;
• fact gathering techniques of interviewing, questionnaires, sampling, etc.:
• verbal communication skills for various forms of presentations;
• systems documentation techniques of structured analysis.

References
Date, C.J. An Introduction to Database Systems. 5th ed. Reading, Massachusetts: Addison-Wesley, 1990

BT504 Introduction to Information Technology
Prerequisites: prior to beginning this unit students are not expected to have any previous experience with computers or information technology

Subject aims
At the end of this unit students will be expected to be able to:
• state in general terms what constitutes information technology and an information system and its applications;
• state the major components of a computer system, how they operate and interact together;
• state the purpose of an operating system and demonstrate a knowledge of the elementary functions of the DOS operating system;
• use a word processing package to prepare documents of a specified standard which can be handed in for assessment;
• state the functions that computers perform in the business world and illustrate these functions with practical examples;
• state the problems associated with manual filing systems and traditional computer systems, illustrate these problems with practical examples and apply this knowledge to a practical situation;
• state the main functions of data base management systems, illustrate these functions using practical examples and apply this knowledge in analysing a practical situation.

BT506 Information Analysis
No. of hours per week: three and a half hours
Prerequisite: BT504 Introduction to Information Technology

Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
Models are important tools used by analysts in trying to understand information systems. This unit examines some of the models commonly used including:
dataflow diagrams,
functional dependency diagrams,
the entity relationship model
They are used to produce pictures which are both simple and effective in representing either the processes or data required for the information system.

We can convert these pictures into a form suitable for storing data in a relational database by a process called normalisation.

An introduction to structural query language is given as a means of extracting data from a relational database.

**Textbook**

To be advised.

**References**


McFadden, P. and Holler, J. Database Management. 3rd ed. Redwood City, Calif.: Benjamin Cummings, 1991


**BTS07 Computer Programming**

Replaced by BTS24 Programming A.

**BTS21 User End Computing**

No. of hours per week: three hours

Prerequisites: BTS04 Introduction to Information Technology

Instruction: lecture/tutorial

Assessment: examination/assignment

**Subject aims and description**

The unit aims to enable students to understand the development process for business systems and to apply techniques to the development of end-user systems. The emphasis moves away from the ‘BTS04 Introduction to Information Technology’ aim of understanding the technology, to an identification and evaluation of the technological solutions which may be applied to business problems. The unit also aims to enhance skills in the verbal and written presentation of system studies. The unit is structured for a study of business computing from the user’s point of view rather than from that of the Information Systems Department.

Hands-on exercises are used to build upon the practical skills gained in first year, with emphasis on the utilisation and evaluation of business packages. Skills previously developed with business software packages will be enhanced and extended.

**Textbooks**

To be advised.

**References**

A detailed reading guide will be issued for each topic and will include articles from industry journals and newspapers. Also included will be: Cushing, B.E. and Forney, M.B. Accounting Information Systems. 5th ed. Reading, Mass.: Addison Wesley, 1990


**BTS22 Business Computing Applications**

No. of hours per week: three and a half hours

Prerequisite: BTS21 Business Computing

Instruction: lecture (one hour), tutorial (one hour) and laboratory (one and a half hours)

Assessment: a major group assignment, one final exam

**Subject aims and description**

The unit builds on the knowledge and skills developed in Business Computing. The aim is to give students skills and understanding relevant to current business systems.

Specifically, typical business systems such as marketing, manufacturing, finance, human resources systems are examined. High level software solutions to management problems are investigated.

**References**

To be advised.

**BTS23 Systems Analysis 1**

No. of hours per week: three and a half hours

Prerequisites: BTS04 Introduction to Information Technology, BTS06 Information Analysis to be taken prior to or concurrently with this unit

Instruction: lecture/tutorial

Assessment: examination/assignment

**Subject aims and description**

This unit will extend the information technology user skills gained in BTS04 and complement the business information analysis and personal data base design skills developed in BTS06 to the analysis, design and implementation of a straightforward transaction processing system with more of an emphasis on the procedural aspects. By the end of this unit students should be able to:

- analyse business and organisational information system requirements of limited scope and complexity, e.g., up to a work group or departmental level
- describe and recommend strategies for developing the computer software components of a solution to such requirements
- make appropriate use of automated software development tools
- implement a simple system
- evaluate the successfullness of a system.

Topics include:

- modelling organisational data
- modelling organisational activities
- setting implementation priorities
- estimation
- database design
- forms, screen and reports design
- process design
- development strategies
- implementation and installation
- evaluation

**References**

To be advised.

**BTS24 Programming A**

No. of hours per week: four hours

Prerequisites: BTS04 Introduction to Information Technology

Instruction: lecture/tutorial

Assessment: examination/assignment

**Subject aims and description**

To give students an understanding of the principles and practice of commercial programming.

By the end of the course, the student will be able to:

- describe the programming process, from problem definition through to program testing;
- discuss the principles of structured programming;
- explain the importance and philosophy of testing;


- design a logical structured solution to a problem using various algorithm techniques;
- read, understand, modify, and debug COBOL programs;
- design, write, test, and document attractive, well-structured programs in COBOL.

Topics covered include the following:
- program structure;
- data structure;
- algorithm design;
- data validation;
- arrays and tables;
- sequential files;
- reporting;
- indexed files;
- strings;
- testing.

References
To be advised

BT526 Knowledge Based Systems
No. of hours per week: three and a half hours
Prerequisite: BT506 Information Analysis and experience in at least one programming language
Instruction: lecture/laboratory
Assessment: examination/assignments

A knowledge of LOTUS 1-2-3 and dBASE would also be useful.

Subject aims and description
In this unit the students develop an understanding of the nature and uses of expert systems in business. The unit involves practical work using the expert system building tools, VP-Expert and ESE.

A second-year unit in the graduate diploma business information technology course.

Topics covered:
- what expert systems are, how they are developed and who is using them;
- how expert systems differ from conventional software programs, human beings who perform tasks expertly and artificial intelligence programs;
- various forms of knowledge representation;
- principles of frame-based systems;
- basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- knowledge base design;
- evolutionary process of knowledge acquisition needed to put expertise into a machine;
- principles of rule based systems and induction systems;
- handling of uncertainty;
- inference;
- VP-Expert (on PC) and ESE (on IBM mainframe);
- comparative strengths and weaknesses of existing knowledge engineering tools for end users and professional developers;
- the pitfalls and opportunities that arise from the important need to evaluate artificial expertise;
- computers and natural language;
- introduction to neural networks.

Textbook
Turban, E. Expert Systems and Applied Artificial Intelligence
Macmillan, 1992

References

BT527 Programming B
Prerequisite: BT504 Introduction to Information Technology

Subject aims and description
This unit builds upon the programming skills and concepts learned in BT504.

This unit introduces the student to sound software engineering principles through programming in a block structured language (currently C). The emphasis is on developing and maintaining information systems applications using modular techniques.

References
To be advised

BT601 Systems Project Management
Subject aims
After completing this unit, students should be able to:

- understand the main reasons for success or failure of information systems projects;
- co-ordinate the skills of a systems development team, users and operators;
- understand how formal planning and control methods, including measurement, can be applied to the development process;
- plan and control the implementation of new systems.

Subject description
Topics covered include:

- project teams and their behavioural development
- project leadership
- project planning and control
- project administration
- progress and quality reviews
- systems development productivity techniques
- the implications of changing systems
- implementation of systems projects

No formal prerequisites are specified. However, it will be assumed that candidates have a prior knowledge of the system development process equivalent to that gained from completing BT503 Software Engineering Strategies.

References
BT602  Information Systems Management
No. of hours per week: three hours
Prerequisite: BT503 Software Engineering Strategies
Instruction: lecture/seminars
Assessment: individual and group assignments

Subject aims
At the completion of this unit, the student should be able to:
- specify the organisation and operation of a modern information systems division in terms of its functional units;
- define and use performance criteria for the information systems function;
- introduce and control new developments in information technology in the organisation;
- negotiate the acquisition of new hardware and software;
- hire, fire, control, support and develop information systems staff;
- implement tools and methods for the more efficient operation of the information systems function.

It is assumed that candidates have a prior knowledge of administrative theory and practice and of computer systems.

Subject description
Topics include the IS function — objectives, organisation, performance and IT infrastructure management, management of the user interface with suppliers and IS staff management. Students focus their research according to their individual and collective interests.

References
Ference, C. Management of Information Technology. Boston: Boyd & Fraser, 1992

BT603  Management Systems
Subject aims
This unit is intended to cover the theory of management information systems and their application for decision making in organisations. The student should be able to:
- analyse decision making theories, styles and framework;
- identify the decision requirements for the management of an organisation;
- determine the effectiveness of information gathering and processing systems intended to facilitate decision making and long-range planning;
- explore the potential of converging technologies in providing better computer based management support;
- evaluate the current use of information technology.

Subject description
Management information systems; the development of management information systems, decision support systems and knowledge based systems; technical considerations; social considerations.

Students will be required to evaluate management systems and the supporting infra-structure within their own organisations.

References

Plus extensive reading of current journals

BT606  Data Base Management Strategies
Replaced by BT630 Data Base.

Ern607  Data Communications and Office Automation
Replaced by BT631 Systems Architecture 1.

BT608  Systems Development Strategies
Replaced by BT634 Information Technology Strategies.

BT611  Systems Software
Replaced by BT632 Systems Architecture 2.

Ern630  Data Base Management Strategies
No. of hours per week: four hours
Prerequisites: BT506 Information Analysis, BT524 Programming A or BT525 Programming B
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

Subject aims and description
By the end of this unit the student will be able to:
- implement a logical data base design in a selection of DBMSs;
- design and program transactions against the data base;
- include appropriate security, integrity and recovery functions in the above.

Topics
This unit builds upon the logical design concepts taught in Information Analysis in covering the implementation, considerations of a number of DBMSs. The students' acquaintance with SQL from that unit is also built upon in the coverage of relational data bases.

References
To be advised

BT631  Communications and Architecture 1
No. of hours per week: three and a half hours
Prerequisites: any two level 2 computing units
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims and description
This unit concentrates on data communications architectures. In particular, at the completion of this unit, students will be able to:
- demonstrate a sound knowledge of the basic concepts and components involved in data communications;
- demonstrate an understanding of the various technologies used in the electronic office and how office automation can increase the efficiency of knowledge workers;
- demonstrate an understanding of communication protocols and their relation to system performance;
- demonstrate an understanding of the goals and structure of the ISO reference model for computer network protocols;
- show a good knowledge of the data communication services and facilities provided by the common carriers;
• demonstrate an understanding of how data communications benefit an organisation and how this function is managed.

References
To be advised

BT632 Communications and Architecture 2
No. of hours per week: four hours
Prerequisites: BT631 System Architecture 1
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignments

Subject aims and description
This unit concentrates on operating system architectures. In particular, this unit provides a comparison of the operating systems MVS/XA and UNIX after giving students a general introduction to the principles and types of operating systems. Both UNIX and MVS/XA are discussed from the perspective of how they manage computer system resources and what sorts of software facilities are provided to users. Students are given both theoretical exercises and practical exercises in the use of MVS/XA and UNIX operating systems.

References
To be advised

BT633 Systems Analysis 2
No. of hours per week: three and a half hours
Prerequisites: BT506 Information Analysis and BT523 Information Systems 1
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
Information systems which meet the business needs of organisations must be based on a thorough understanding of the information needs (what needs to be known?) and the business processes (what needs to be done?). A number of methods of analysing and documenting this understanding of the organisation are discussed. Several of these are applied to transforming the analysis of business needs to a model for system design.

This unit extends the knowledge of analysis methods gained in BT506 Information Analysis and BT523 and compares and contrasts the various methods so that students will be able to select the most relevant approach.

References
To be advised

BT634 Systems Development Strategies
No. of hours per week: three hours
Prerequisites: any two level 2 computing units
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
This unit examines the relationship between information technology and its organisational context. Students will study the ways in which information technology can be used for competitive advantage and planning methods which integrate information systems and business strategies. The role of an information system as part of an overall business plan will be examined and associated costs, benefits and risks will be considered.

At the end of the course the student will be able to:
• understand the way that managers think and work and the need for computer systems to improve their effectiveness in decision-making;
• justify the need for careful analysis, risk assessment and control procedures suitable for different system development approaches;
• understand the strategic role of information technology and the need to achieve alignment between IT and corporate strategy.

Topics covered:
• information systems theory;
• decision support systems;
• information systems issues for management;
• information systems planning network;
• the organisational role of end user computing;
• aligning IT with business strategy.

References
To be advised

BT635 Business Software Engineering
No. of hours per week: four hours
Prerequisites: BT506 Information Analysis with BT523 Information Systems 1 or either BT524 or BT525
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignments

Subject aims
In this unit, students are introduced to design concepts, principles and methods relevant to the design of software for information systems.

Although the main emphasis is on techniques in widespread use, other approaches and requirements are also covered. In particular, design methods suited to projects where Computer-Aided Software Engineering (CASE) will be used are studied and applied.

Because students are expected to acquire competence in choosing and applying design techniques the unit includes a project component in which CASE software will be used.

BT636 Advanced Application Development
No. of hours per week: four hours
Prerequisites: BT506 Information Analysis, BT524 Programming 1 or BT525 Programming 2
Instruction: lecture/laboratory
Assessment: assignments

Subject aims and description
This unit provides students with the opportunity to work in a formal project team environment on the development and implementation of an information system.

Objectives.
To employ the practical skills learned in other units, such as:
• software engineering techniques;
• project control;
• standards development;
• programming;
• testing;
• migration/change control.

By doing so, to deepen and broaden the understanding of practical computing, and to reinforce the theory learned in other units.

References
To be advised

BT637 Advanced Programming B
Please refer to BT337.
BT703  Introduction to Business Software  
No. of hours per week: twenty hours  
Prerequisites: nil

**Subject aims**
The aim of this unit is to:
- introduce students to information technology concepts with particular emphasis on decision support systems;
- enable students to appreciate, and gain practice in the application of a range of PC-based analysis methods as a means of providing information for management decision making;
- enable students to confidently use a number of key software packages which can be utilized in other areas of the course.

**Subject description**
Software and hardware components of decision support systems
- Decision support system concepts
- Recent software developments
- Hardware facilities available
- Specific application software available for decision support analysis
- Recent developments in decision support software
- Mainframe vs. PC based decision analysis

**Decision support software**

**Spreadsheets**
An appreciation of the nature and role of modelling in the decision making process, e.g. financial, forecasting, simulation.

Choosing the right type of decision analysis tool for a specific application.

Using Lotus 1-2-3 for decision analysis.

Students will be expected to acquire the necessary skills needed to build their own models.

**Graphics**
The presentation of information in a graphic format, including output from modelling packages.

Using presentation graphics software for effective communication.

**Data Bases**
- Using corporate data as source material for micro-based decision support tools.
- Data base packages as a decision support facility. Students will be expected to acquire the necessary skills needed to build and query their own databases.
- Availability and accessing of public data bases.

**Textbooks**
As this unit is primarily concerned with the use of application software and current developments in using micro-computers, textbooks form a minor component of reference material. Software documentation, user manuals and current journal articles will provide the major reference material for the unit. It is required that students have access to a PC for work undertaken outside formal session times.

On completion of this unit students will have developed an understanding of the financial management of the IT department, the management of productivity and quality in software development and the application of metrics to the management of IT.

**Subject description**

**Topics covered** in these three areas include:
- Financial management: Cash flow, chargeout, budgets and capital expenditure evaluation;
- Quality: An overview of total quality management; factors affecting productivity and quality in S/W development; approaches to controlling quality; quality standards; measurement of quality;
- Metrics: Measuring IT performance — quality, operations and productivity measures at both strategic and tactical levels; evaluating IT investments including IT infrastructure.

**Textbooks**
No single text covers the unit material

**References**

BT708  Technology and Innovation  
No. of hours per week: three hours  
Prerequisites: BT707 Information Technology Effectiveness, BT703 Technological Forecasting  
Instruction: lectures, seminars, workshops  
Assessment: assignment and research report

**Subject aims**
This unit focuses upon emerging technologies and their diffusion through the workplace and industry in general. Advantage will be taken of local and visiting speakers.

**Subject description**
The selection of technologies for examination is subject to developments at the time that the unit is offered. It is anticipated that technologies in such areas as communications and knowledge based systems will be appropriate. Diffusion involves identifying, planning for the introduction and measuring the success of new technology.

**Textbooks**
There will be no prescribed textbook. Students will be directed to appropriate books and journal articles.

BT802  Project and Thesis  
Prerequisite: Graduate Diploma in Management Systems or equivalent

**Subject description**
Candidates will be required to submit a research project report on a topic of their own selection. The topic will be related to computer-based management systems and, dependent on the specific area covered, an appropriate supervisor will be appointed. In some instances students may have more than one supervisor. There will be at least two examiners. A preliminary proposal of the project to be undertaken must be submitted for approval by the convening panel of the Masters Program.

There will be a requirement for formal monthly reporting by candidates, both oral and written throughout the term of the project. Failure to meet satisfactory standards of progress
on a monthly basis may preclude final submission for the Masters Degree.

To enable other candidates to share the benefits from the applied nature of the projects, all students in the masters program shall attend two or three seminars in second semester (open also to the general public, interested persons and employers) where final year students will present the salient results of their research.

The duration of the project will be equivalent to four units of the Masters Degree. The project will be normally taken in the final year of the course. Prior to commencing their project, students shall undertake a short course of study in research concepts and methodologies.

As a guide, the following may be examples of topics appropriate for research:

- performance and implementation issues in database crash recovery;
- evaluation of information system planning and its relationship to information systems performance;
- a systems model for improving human factors of computer environments;
- a strategic planning methodology for a management information system;
- designing dependable information systems;
- the effectiveness of knowledge based systems in a commercial environment;
- attitudes of office personnel towards advanced office technology;
- expert systems for design problem solving;
- decision support systems in a manufacturing environment;
- distributed knowledge based system for an intelligent manufacturing system;
- decision support systems using expert system techniques;
- organisational structures to support end-user computing.
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Courses offered

The Faculty of Engineering includes the schools of Civil Engineering and Building, Electrical Engineering, Innovation & Enterprise, Mechanical and Manufacturing Engineering. Professional courses offered by the Faculty and these schools are as follows:

**Faculty of Engineering**

**Y050** Degree of Bachelor of Technology

**School of Civil Engineering and Building**

**C050** Degree of Bachelor of Engineering (Civil)

**C050** Degree of Bachelor of Engineering (Civil)/Graduate Diploma in Management

**C051** Degree of Bachelor of Technology (Building Surveying)

**C082** Graduate Diploma in Civil Engineering Construction

**Y096** Degree of Master of Engineering, by research

**C092** Degree of Master of Technology (Construction) (by coursework)

**Y001** Degree of Doctor of Philosophy

**School of Electrical Engineering**

**E050** Degree of Bachelor of Engineering (Electrical Power and Control, Communication and Electronic, or Computer Systems)

**E050** Degree of Bachelor of Engineering (Electrical Power and Control, Communication and Electronic, or Computer Systems)/Graduate Diploma in Management

**E085** Graduate Diploma in Computer Systems Engineering

**Y097** Degree of Master of Engineering (by research)

**Y001** Degree of Doctor of Philosophy

**School of Innovation & Enterprise**

**Y072** Graduate Certificate in Enterprise Management

**Y073** Graduate Certificate in Training Management

**Y082** Graduate Diploma in Entrepreneurship and Innovation

**Y082X** Graduate Diploma in Entrepreneurship and Innovation (Singapore program)

**Y081** Graduate Diploma in Management

**Y095** Degree of Master of Engineering (by research)

**Y091** Degree of Master of Enterprise Innovation

**Y091** Degree of Master of Enterprise Innovation (Singapore program)

**Y001** Degree of Doctor of Philosophy

**School of Mechanical and Manufacturing Engineering**

**P050** Degree of Bachelor of Engineering (Manufacturing)

**M050** Degree of Bachelor of Engineering (Mechanical)

**Y050** Degree of Bachelor of Technology

**M055** Degree of Bachelor of Technology (Aviation)

**M082** Graduate Diploma in Air Conditioning

**P085** Graduate Diploma in CAD/CAM

**P083** Graduate Diploma in Chemical Engineering
The Faculty of Engineering has an arrangement with the University of Tasmania at Launceston to undertake part of a Swinburne engineering degree course in civil, manufacturing and mechanical engineering and the first year of the electrical course are currently available at Launceston. The equivalent of the first two years of the University of Tasmania at Launceston which enables students to commence their engineering studies at Launceston to undertake the two six-month industrial experience components of their course in Tasmania.

Women in Engineering

Women are still a minority in engineering courses and the workforce. The Faculty of Engineering actively encourages women to choose engineering as their career and provides them with opportunities to form networks with other female students within the course and female practising engineers. Many women who become engineers enjoy the variety of career opportunities that engineering opens to them and aspects of the work that all engineers share, such as:

- applying science to solve problems;
- working with people;
- helping meet society's needs, such as energy usage; and environmental issues;
- designing and creating solutions, such as with manufactured products, structures and community services.

The alternative entry scheme (described under Admission to first year degree courses) allows students who have not chosen the standard mathscience prerequisites in their VCE to review their career decisions and to enter engineering by undertaking a more intensive program of mathematics and physics in the first-year of their degree program.

Social and career oriented activities are coordinated with the National Centre for Women and provide opportunities for women to interact.

Women who would like further information about the engineering degree program and career opportunities should contact the Sub-Dean, on 819 8510 or National Centre for Women on 819 8633.

Industry Based Learning (IBL) — Cooperative Education Program

Coordinator, Cooperative Education
J.K. Russell
Administrator
K. Brown

General

Industry based learning (IBL) is a development process that combines the rigour of an accredited academic program with a period of paid, supervised and relevant experience in the workplace. This work is an integral part of assessment for the degree qualification. A feature of undergraduate courses offered in the Faculty of Engineering is their IBL format. These courses include components of paid work experience which form an integral part of the education program.

IBL program

Undergraduate courses offered as IBL programs are the engineering and technology degree courses in civil, electrical power and control, communication and electronics computer systems, manufacturing and mechanical engineering and courses in building surveying. Students are required to complete twelve months (two semesters) of approved IBL before becoming eligible for the award of an engineering degree. Twelve months (two semesters) of approved IBL is required for the award of a building surveying degree and a technology degree.

Benefits

Students who undertake an IBL course derive many benefits from their involvement in the program. Some of these are:

- academic performance improves following industrial experience;
- students earn while they learn (recognised rates are paid during periods of industry based learning);
- students work with professionals on real industrial problems;
- students are able to sample particular areas of the chosen branch of their profession before graduation;
- students graduate mid-year when employment opportunities are more readily available;
- industry based learning gained during the course is an advantage when graduates are seeking their first jobs.

Placement of students

The Faculty of Engineering is committed to the task of finding placements for students in IBL courses. Students may take initiatives to secure their own job placements but before contacting a prospective employer a student must contact the Administrator, Cooperative Placement Service, to determine whether Swinburne has made an approach to the employer concerned.

Where all reasonable effort to find a job has been made by both Swinburne and students, but no placement has been found, the student may apply to his/her Associate Dean to reschedule the IBL components of the course.

Students without permanent residence status should be aware that while the faculty will assist them in finding an industrial placement, it is frequently impossible to find local employment for students in this category. These students are advised to seek placement in their home country and the faculty will provide information on which academic institutions are able to provide supervision.
Supervision
While in IBL students are supervised by their employers and a member of the faculty’s academic staff who acts as the student’s industrial tutor.

Employing Organisations
A large number of companies support the Cooperative Education Program (IBL) by offering employment to students from the disciplines of Civil, Electrical/Electronic, Mechanical and Manufacturing Engineering. These companies are from the automotive, communications, electronics, computer, construction, and manufacturing industries and from local government.

Overseas placement
The faculty cooperates with the following universities in organising overseas placements:
- Cleveland State University
- Drexel University, Philadelphia, Pennsylvania
- University of Surrey, Guildford, England
- Northeastern University, Boston, Massachusetts, USA
- University of Cincinnati, USA
- Lawrence Institute of Technology, USA

IBL graduates offer employers a competitive edge
Swinburne Higher Education Division’s IBL programs place students out in industry, in paid work, where they get the opportunity to look at the realities of their chosen career paths. Therefore, when they graduate, they join the employer with the advantage of having had one year of structured work experience.

This means:
- they are ‘results orientated’;
- they already understand and accept workplace targets, relationships and disciplines;
- they are a year older and more mature;
- they have completed a longer course, e.g. engineers have had three-and-a-half years full-time study with the same teaching content of a four-year course, plus one year of supervised paid employment;
- they also bring with them knowledge of the latest technology, acquired in the course of their studies.

Employers alerted to the ‘bottom line’ advantages will also be interested in these further benefits:
- by employing a student for his/her training, the employer can evaluate a potential graduate’s suitability to the organisation;
- regular and long-term contact between employers and faculty staff has a beneficial influence on course design and teaching methods;
- the student promotes the image of the employer’s organisation at Swinburne.

IBL graduates bring with them:
- a realistic attitude to work;
- access to professional specialised faculty staff;
- access to Swinburne’s high technology facilities including computer links to international information banks.

For further information, contact the Administrator, Cooperative Placement Service.

Engineering Alumni Association
Coordinator, Alumni Association
J.K. Russell
Administrator
BE Erickson

Seventyfive years after the inception of the Faculty of Engineering, a new link has been forged between Swinburne University and the community with the foundation of the Swinburne Engineering Alumni in 1990. The Alumni Association is open to former staff, graduates and members of the community interested in the work of the Faculty, and promoting the history and identity of Swinburne. Equally important are the social and business contacts which can be fostered via the Alumni.

Aims and objectives
- to offer services and activities responsive to the needs of Alumni members;
- to give Alumni members pride and purpose of membership and provide a network of industry contact;
- to provide information on postgraduate education and curriculum development;
- to give the Faculty a valuable resource of qualified expertise and support for its programs and activities and a forum for contact with peers.

Advice to prospective students
First-year engineering degree
Secondary students considering a professional engineering course in civil, electrical power and control, communication and electronic, computer systems, manufacturing (chemical or production), mechanical engineering or technology, should bear in mind the need to undertake studies in mathematics and the physical sciences which will allow them to proceed to a Year 12 course of study as prescribed in the entrance requirements.

A feature of Swinburne’s engineering degree courses is the common first-year program which enables a student commencing a course to delay making a final decision on the branch of engineering to be undertaken until the end of first year.

The subjects comprising first year are intended to form a firm foundation on which studies in later years are built. Considerable emphasis is placed on the development of fundamental scientific principles and an introduction to engineering technology and techniques.

Another feature of all degree courses is their four-and-a-half (nine-semester) year industry based learning format. The program consists of seven semesters of academic tuition in the Higher Education Division of the University plus two semesters of IBL. The course structure for engineering degree courses is shown in the sections pertaining to the various schools of the Engineering Faculty.

Second and later years engineering degree
Students who have completed, or partly completed, an engineering course at another tertiary institution may apply for entry to an engineering degree course at Swinburne. Applications in this category are essentially considered on the basis of the course studied by the applicant and the results obtained. Enquiries should be directed to the Associate Dean of the school concerned.

The policy of the Engineering Faculty Board regarding admission with advanced standing is stated in the section entitled ‘Admission with advanced standing’.

Bachelor of Technology (Building Surveying)
Secondary students planning to enter the Bachelor of Technology (Building Surveying) should bear in mind the necessity for studies in mathematics and the physical sciences. Eligible applicants should have successfully completed a VCE course of study as prescribed in the entrance requirements.
Students who have completed a Certificate of Technology course in an appropriate area will be admitted with some exemptions, as appropriate.

**Admission to courses**

**Admission to first-year degree courses**

**Selection**

Applications for first-year are considered by the Engineering Faculty Selection Officer.

Selection is based primarily on academic merit as assessed by results achieved in Year 12 subjects, or their equivalent. Consideration will be given to the full range of an applicant's VCE studies and results, the level of performance in CATS in prerequisite studies and any other information available to the Selection Officer.

**Standard Entry Scheme**

**VCE**

To be eligible for consideration for Standard Entry, you must have satisfactorily completed your VCE or equivalent in the following subjects (an average of Grade D or better is required):

- English (units 1, 2, 3 and 4)
- Physics (units 1, 2, 3 and 4)
- Mathematical Methods (units 1, 2, 3 and 4)
- General Mathematics (units 1 and 2)
- Specialist Mathematics (units 3 and 4)
- Chemistry (units 1 and 2)
- Chemistry (units 3 and 4 are highly recommended. Bonus points of 10% will be awarded).

Approved study structures are not normally taken into account.

**Associate Diploma entry**

Persons who have completed an associate diploma with very good results may be eligible for up to one year's credit in the degree program. All applications will be considered individually.

**Alternative Pathways Entry Schemes**

(A) VCE (or equivalent) Alternative Pathways Entry

To be eligible for consideration under VCE Alternative Pathways Entry, you must have satisfactorily completed your VCE or equivalent. An average of Grade D or better is required in the following:

- English (units 1, 2, 3 and 4)
- Physics (units 1 and 2)
- Chemistry (units 1 and 2)
- Mathematical Methods (units 1, 2, 3 and 4)
- General Mathematics (units 1 and 2)

Bonus points of 10% will be awarded for: Physics, Chemistry and Specialist Mathematics at units 3 and 4 level.

The first year for students entering under the Alternative Pathways Entry Scheme commences two weeks before the Standard Entry Scheme with additional work undertaken during the year. In addition to other engineering subjects, students receive special attention in mathematics and physics as appropriate.

At the conclusion of the first year program Alternative Pathways Entry students have the same options open to them as do those entering through the Standard Entry Scheme.

(B) Certificate of Technology and Associate Diploma

Persons who have satisfactorily completed an associate diploma in an engineering field including certificate Mathematics level 3, or an associate diploma in an engineering field including Mathematics 2, or additional satisfactory completion of HSC (VCE or TOP) Mathematics A or 2 units of VCE Mathematics at units 3 and 4 level. VCE Physics units 3 and 4 are recommended for students to have adequate background to successfully undertake the course.

- Mature-age and trade background

If you have several years of experience and/or a trade background, you will be considered on your individual merits, however, you will generally be required to have successfully completed VCE Mathematics A or 2 units of Mathematics at units 3 and 4 level. Full-time degree students will undertake classes with the students selected under the VCE Alternative Pathways Entry Scheme. There is no specific age limit for mature age in the Faculty of Engineering, but this category is not intended for persons who have recently completed their secondary schooling.

**Application procedure**

In addition to the information given below applicants should refer to the section entitled, 'Application procedure', in the general section of the Handbook.

**Full-time**

Applications for entry to full-time first-year courses must be made through the Victorian Tertiary Admissions Centre, 40 Park Street, South Melbourne, 3205. The closing date for VTAC applications for entry is mid-September each year.

The closing date is usually the middle of January.

**Deferral**

Applicants offered a place in first year for 1994 may apply for deferral until 1995. Applications for deferral should be made in writing and directed to the Assistant Registrar (Engineering).

Deferral will be virtually automatic for those who apply as soon as the offer of a place is made. Later applicants may be asked to give reasons for their request for deferral.

Applicants who are granted a deferral will be notified in writing by the Assistant Registrar (Engineering).

If a person who has been granted a deferral undertakes a course in another faculty or another institution, the offer of a reserved place will lapse.

**Transfer between campuses**

Students will normally be expected to complete their courses at the campus at which they originally enrol.

Applications from students who wish to transfer from one campus to another will be considered on their individual merit by the Courses Committee.
Factors taken into consideration when processing applications may include:
* resource implications
* academic progress
* the need to transfer to another campus.

Where a course is offered on both campuses, transfers can be made with the approval of the Faculty.

Admission to second and later years
Applicants seeking a place in second or later years of an engineering course as either full-time or part-time students must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of January.

Overseas students must also contact the Australian diplomatic post in their country to make the appropriate visa applications.

Admission to Graduate Diploma and Masters by coursework courses
Graduate diploma and masters by coursework courses in a range of specialist areas of importance to engineers are available. The usual entry requirements are completion of a degree or diploma in a field of engineering or applied science.

Applicants for these courses must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of November for the following year.

Admission to Masters (by research) and Doctor of Philosophy courses
Applicants for these courses must apply directly to Swinburne. A letter of application should be written to the Office of Research and Graduate Studies.

Enquiries regarding Masters programs by research should be directed to the appropriate school in the first instance.

Admission with advanced standing
A student who has successfully completed, or partly completed, an acceptable post-secondary course may be admitted with advanced standing to an engineering course at Swinburne. The policy of the Engineering Faculty Board with regard to admission with advanced standing is set out in the following regulations:

1 General
1.1 The Faculty Board believes that in general students who have completed satisfactorily, part of an engineering course at another tertiary institution in Victoria, or another comparable course, should receive credits for an equivalent part of the course for which they are enrolled at Swinburne.

1.2 In the consideration of applications for credit the following principles will be applied by the Board:
(a) a student should be brought on to a standard course as soon as possible after entry into the Higher Education Division of the University
(b) students should not undertake subjects in advance of the semester in which they will enter the standard course
(c) students who have passed a particular level of a similar course at a different institution may be admitted to the standard course at the next successive year's level, either with or without small amounts of additional course work being required
(d) consideration should be given to the intention of a series or group of subjects rather than the details of the content matter of each subject within such series or group
(e) a credit may be granted on the basis of relevant industrial experience.

1.3 For all graduate diploma courses offered by the Faculty of Engineering, a student must complete at least fifty per cent of the prescribed total course time for that particular course at Swinburne.

2 Application
2.1 In applying this policy the Board will follow these guidelines:
(a) except in extraordinary circumstances credits are only approved at the beginning of a course of study
(b) credits are to apply only to a specified course of study in the Higher Education Division of the University
(c) a credit shall be valid for a particular course and syllabus and only for the duration of such course or syllabus
(d) in order to qualify for an award in the Faculty of Engineering a student must complete as a minimum, an equivalent full-time year in the Faculty.

2.2 In order to request credit, students entering a course will be required to do as follows:
(a) register their intention to seek admission with advanced standing at the time of first enrolment
(b) lodge supporting documentation with their department within six months of registering their intention.

Course requirements
Class timetables
The syllabus for each of the engineering courses may be found in the separate sections pertaining to the various schools of the Engineering Faculty.

Provisional timetables for all years of engineering courses will be displayed at enrolment. Students should note that these timetables are provisional only and may be changed depending on staff and facilities available. Where it is necessary to change a timetable, details will be posted on the faculty or school notice-board, as appropriate.

Some subjects in early years are offered as part-time evening classes. However, in later years of the course part-time students may be expected to undertake classes during the day. Enquiries regarding subjects available on a part-time basis should be directed to the associate dean of the relevant school.

Practical work
Practical work forms a significant part of most subjects offered by the Engineering Faculty.

Students are expected to attend all practical work sessions (for example, laboratory work, drawing office and field work, excursions and site visits) and to complete all the practical work assignments set by the lecturers responsible for a particular subject. Assignments not submitted by the due dates may fail to count as practical work completed.

Students should approach their lecturers to find out the details of practical work requirements in each subject.
Examinations and assessment

Various methods are used to measure student performance in subjects offered by the Engineering Faculty. These methods include the use of formal examinations; tests held during, or at the end of, each semester; project work; assignments; and laboratory exercises. A statement setting out the assessment and workload requirement for each subject is issued to students early in each semester. Each engineering school also maintains a record of the overall work program for students in each year group of a full-time course for student and staff information.

Students are automatically entered as candidates for all subjects in which they enrol. Students should therefore carefully check their statement of enrolment which is posted to them approximately four weeks after the commencement of each semester.

Students enrolled in subjects spread over both semesters, for example most subjects in common first-year engineering degree, should note that mid-year progress reports are displayed on faculty and school notice-boards by the end of the first week of second semester. These reports are not formally published results but are an indication of student progress at mid-year.

Where a subject is completed in first semester, the assessment result is published as soon as possible after the end of semester.

For degree courses, with the exception of final year, the duration of each academic semester will be eighteen weeks which includes, subject to approved variations:
(a) thirteen weeks of teaching and one assignment week; and
(b) formal tests/examinations in the sixteenth, seventeenth and eighteenth weeks.

The specific weeks devoted to these activities are given in the Swinburne calendar in the front of this Handbook.

For each subject the total time for formal tests or examinations per semester will be no longer than one thirteenth of the formal contact time per semester.

(Students should also refer to the section entitled 'Procedures and Regulations' in the final chapter of this Handbook.)

Faculty Passing Scheme

The revised regulations on passing by years (Faculty Passing Scheme) are set out below. These regulations have applied since 1 January, 1993.

1 General
The Faculty of Engineering operates a Faculty Passing Scheme which applies to:
(a) full-time undergraduate students;
(b) part-time undergraduate students whose weekly workload is nine or more contact hours.

A part-time student is one enrolled for subjects which require a total class, tutorial and/or laboratory contact time of less than 75% of the full-time course load.

A full-time student must normally be enrolled for a complete year level of a degree program. Full-time studies may not usually be composed of subjects from various program levels unless the appropriate associate dean has approved a special course of study.

Students who have a full-time workload but who are not pursuing the course prescribed in the Handbook for the particular year, must have this course approved by the associate dean of the school concerned before becoming eligible for consideration under the Faculty Passing Scheme.

2 Special programs of study
Applicants with 'advanced standing' who are admitted to full-time studies may be enrolled in special programs of study as interim measures until they can be enrolled in the normal groups of subjects. The rules of faculty passing will apply. Such special programs require approval by the associate dean of the awarding school.

3 Revised Faculty Passing Scheme
This revised scheme has operated since 1 October, 1990 and applies for all years of undergraduate courses offered by the Faculty of Engineering, including full-time common flat-year engineering or technology.

3.1 Students will enrol only for their individual subjects. They will not enrol in a Faculty Result code.

3.2 For students to proceed from one full-time year to another, they must achieve a passing grade (as defined) in all subjects.

3.3 If, at the end of supplementary assessment, students do not achieve a passing grade (as defined) in a particular subject then that subject must be repeated.

3.4 A full-time student who does not pass his/her full-time year's work may be permitted by Faculty Board to repeat the year's work as a full-time student, otherwise repeat studies have to be completed on a part-time basis. (See also Exclusion section.)

3.5 The various grades have been grouped for ease of understanding.

Passing grades are as follows:

3.5.1 First group
HD High Distinction
D Distinction
C Credit
P Pass
P* Pass (Marginal)

3.5.2 Second group
FP Faculty Pass granted in that subject
SP Passed at Supplementary Assessment

Grades of fail are as follows:

3.5.3 First group
N* Fail (but serious attempt)
N Fail (Outright)

3.5.4 Second group
SN Fail at Supplementary Assessment

3.5.5 Third group
NWD Fail due to late withdrawal
NA Fail no attempt

3.6 Students will, prior to publication of results, be awarded preliminary grades from amongst the first group (passing or failing) results or the third group failing results, if applicable.

3.7 Subjects in which a first group passing grade or a third group failing grade preliminary result, or a deferred result, has been achieved will be published officially without further alteration (but without the asterisk, in the case of P* and N* results).

3.8 The Engineering Counses Committee will consider special cases recommended by the appropriate School, or Sub Dean, First-Year Studies.
To be eligible to be considered as a special case, a full-time student should normally have provisional results of N* in not more than two subjects, where the total hours per week for these subjects is not more than seven. For a part-time student to be eligible to be considered as a special case, the student should normally have a provisional result of N* in only one subject, where the total hours per week for that subject is not more than four.

Students considered in this category will normally have a positive aggregate rating as calculated by the Faculty Passing Formula as follows:

\[ A = \frac{n_i z_i - 5}{n_i} \]

where \( A \) is aggregate rating,

\( n_i \) is the number of hours/week in the ith subject,

\( z_i \) is the rating in the ith subject.

A student's rating in each subject is determined from the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
</tr>
<tr>
<td>N*</td>
<td>4</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
</tr>
</tbody>
</table>

Where a student recommended as a special case has been initially granted a failing grade, from the first group, in one or more subjects, the Committee must decide, on a subject by subject basis, which of the following actions will apply:

3.8.1 The grade stands as an "N".

3.8.2 The student will be granted a Faculty Pass in that subject. If so, the grade will be changed to, and published as, FP. The student will not be required to repeat a subject for which the grade of FP has been awarded.

3.8.3 The student will be granted supplementary assessment in that subject. If so, the grade for initial publication will be changed to "SUP" to indicate that the student has been granted supplementary assessment.

The student will then undertake supplementary assessment. In the case of first year subjects, a summer school system may be available. Details are set out below.

If the student passes the supplementary assessment, the grade will be changed to "SP" and the student will not be required to repeat the subject. If the student fails the supplementary assessment, the grade will be changed to "SN" and the student will be required to repeat the subject.

If a student chooses not to undertake the supplementary assessment granted in that subject, the result will revert to the grade awarded in the initial marking.

The supplementary assessment will not, for the purposes of exclusion, be regarded as a complete (i.e. second) attempt at a subject. See also the section on 'Exclusion from courses'.

4. First-year Summer School Scheme

This revised scheme has operated since 1 October, 1990 and applies only to full-time common first year engineering or technology degree students. At the discretion of Courses Committee, the Summer School Scheme may operate in addition to the Faculty Passing Scheme. This will be decided on a yearly basis.

4.1 Students will enrol only for their individual subjects. They will not enrol in a Faculty Result code.

4.2 For students to proceed from first year to second year, they must achieve a passing grade (as defined) in all subjects.

4.3 If, at the end of Summer School (supplementary assessment), students do not achieve a passing grade (as defined) in a particular subject then that subject must be repeated.

4.4 The various grades have been grouped for ease of understanding.

Passing grades are as follows:

4.4.1 First group

HD High Distinction
D Distinction
C Credit
P Pass
P* Pass (marginal)

4.4.2 Second group

FP Faculty Pass granted in that subject
SP Passed at Supplementary Assessment

Grades of fail are as follows:

4.4.3 First group

N* Fail (but serious attempt)
N Fail (outright)

4.4.4 Second group

SN Fail at supplementary assessment
SS Fail but student granted summer school in this subject

4.4.5 Third group

NWD Fail due to late withdrawal
NA Fail no attempt

4.5 Students will, prior to publication of results, be awarded preliminary grades from amongst the first group (passing or failing) results or the third group failing results, if applicable.

4.6 Subjects in which a first group passing grade or a third group failing grade preliminary results has been achieved will be published officially without further alteration (but without the asterisk, if applicable).

4.7 The Engineering Courses Committee will consider special cases recommended by the Sub Dean, First-Year Studies.

Where a student recommended as special case has been initially granted a first group failing grade in one or more subjects, the Committee must decide:

4.7.1 Whether the student is eligible to be considered under the provisions of the faculty passing scheme.

OR

4.7.2 On a subject by subject basis, whether the student will be granted the opportunity to undertake Summer School in that subject. If so, the published result for that subject will be changed to "SS" indicating that the student failed the subject but was granted
Summer School in that subject. On the completion of the Summer School, "SS" grades will be changed to "SP" if a pass is granted for that subject and to "SN" if the result is a fail.

If, at the end of the Summer School System the student has a failing grade, the student will be required to repeat that subject.

A student will normally be permitted to undertake Summer School in a maximum of three subjects.

The Summer School assessment will not, for the purposes of exclusion, be regarded as a complete (i.e. second) attempt at a subject, however, individual students will be granted the opportunity to undertake Summer School on one occasion only.

5 Result categories and percentage scores
The relationship between result categories and normalised percentage scores is:

<table>
<thead>
<tr>
<th>Result category</th>
<th>Range of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>85% – 100%</td>
</tr>
<tr>
<td>D</td>
<td>75 – 84</td>
</tr>
<tr>
<td>C</td>
<td>65 – 74</td>
</tr>
<tr>
<td>P</td>
<td>50 – 64</td>
</tr>
<tr>
<td>N</td>
<td>0 – 49</td>
</tr>
</tbody>
</table>

It should be noted that the above table is used in determining result categories for all students enrolled in a subject irrespective of whether the students are eligible for a Faculty Pass or not.

Additional grades, for which percentage scores are not applicable, may be awarded as a result of application of the Faculty Passing Scheme. These are:

FP Faculty Pass  SP Pass at supplementary assessment
SN Fail at supplementary assessment  SUP Supplementary assessment granted for this subject

Guidelines for part-time study
With changes in the courses of study leading to degree qualifications, some part-time students may be unsure of the subjects they are required to pass in order to qualify for an award.

The following guidelines which the Engineering Faculty Board has established should be used to determine the subject requirements for students undertaking courses (including conversion programs) on a part-time basis:

(a) In general, students who have not at some time discontinued their course without permission, will follow the course of study in operation at the time of their initial enrolment in the Higher Education Division of the University and as specified in the engineering section of the Handbook for that year.

(b) Despite the above, students who are undertaking a course of study which has been unduly prolonged, or who would benefit from transfer to a later course of study, may be transferred by the Engineering Faculty Board on the advice of the associate dean of the student's school.

(c) Students who discontinue study without permission and who later wish to renew their enrolment in the Higher Education Division of the University in that same course will be treated as new students but will receive such credit for the subjects previously passed as is determined by the Engineering Faculty Board on the advice of the associate dean of the student's school.

(d) Where subjects have been discontinued since students' initial enrolment, students will be required to undertake the presently operating subject equivalent subjects. Information regarding superseded subject equivalents is available from the associate dean of the student's school.

(e) As students will realise, there is often benefit in transferring from the course of study in operation at the time of enrolment to a later course of study. With the permission of the associate dean of the student's school, students may transfer from the course of study for which they are enrolled to a later course of study but should recognise that such a transfer may involve the undertaking of some additional subjects.

Minimum hours for part-time enrolment
The normal load for part-time students is approximately half that of full-time students, and is typically between 10 and 12 hours of class contact per week.

To enable the Faculty to admit as many students as possible within its quota limits, a minimum time commitment by part-time students is necessary. This minimum commitment has been set at seven hours per week, unless special circumstances apply. Such special circumstances include non-availability of suitable classes, quota limitations, graduate studies, or cases where the proposed enrolment arrangements lead into a standard full-time program. In such special circumstances, the enrolment requires the specific approval of the head of the awarding school.

Part-time students who initially enrol for seven hours per week or more, and who subsequently withdraw or determine their enrolment to below seven hours per week, may be processed as a total withdrawal from the course.

Normally the maximum hours of class contact for a part-time undergraduate student are fourteen hours per week, although special permission may be granted by the associate dean to study up to sixteen hours per week, particularly if the increase in hours will allow the student to study on a full-time basis in the following year.

Exclusion from courses
A student will be considered for exclusion from further study in the course in which that student is enrolled if he or she:

(i) fails any subject twice
or
(ii) fails more than half of the subject hours in which he or she is enrolled in any academic year.

Normally a third attempt at any subject will not be permitted.

A student may repeat full-time studies on a full-time basis once only during a course, unless special approval is given by the Engineering Faculty Board. If an associate dean (school) considers that a prima facie case for exclusion exists, the matter will be referred to the Engineering Courses Committee sitting as an Exclusions Sub-Committee.

The procedure for considering engineering students recommended for exclusion is as follows:

1 Based on compliance with the faculty regulations on suspension from courses, the associate dean submits a case for the possible exclusion of a student to the Engineering Courses Committee.
2 If the Engineering Courses Committee accepts that a case exists, the student is advised that his/her status in the course concerned is to be considered at a subsequent meeting of the Committee; and that he/she may attend to present information relevant to the case.

3 The Committee may co-opt representatives when hearing a case for exclusion.

Assessment irregularity

Cheating and plagiarism, that is the action or practice of taking and using as one's own, the thoughts, writings or other work of someone else with the intent to deceive, constitutes an irregularity under the Swinburne Assessment Regulations. Such an action is a major infringement of the University's academic values. It is essential that students understand that plagiarism or cheating shall be considered to have occurred if:

- a computer program substantially written by someone else (either another student, a previous student or the author of a publication) is presented as the student's own work;
- paragraphs, and even sentences in essays which are written by someone else are not enclosed in quotation marks, and accompanied by full reference to source;
- work of someone else is paraphrased, and is not appropriately attributed and referenced.

Enrolment

Although the Swinburne calendar is divided into two teaching semesters, engineering students need enrol only once for the subjects they are undertaking in any one year. Where it is necessary to change the list of subjects entered for at enrolment a student must complete an Amendment to Enrolment form available from Student Administration, the Engineering Faculty Office, or Engineering school offices.

Students should note that they must obtain the approval of the associate dean of their awarding school before amending their enrolment.

Applications offered a place in an engineering course will be expected to attend for enrolment in February. Successful applicants will be notified of enrolment times when they are offered a place.

Continuing students in engineering courses are required to present for enrolment during the times set aside for re-enrolling students in December. Students need to check University notice-boards for details which are made available towards the end of second semester. Students who do not re-enrol on the designated day and who do not make prior arrangements with the relevant administrative officer for an alternative time, will be liable to lose their place in the course.

Enquiries regarding courses to be followed should be directed to the associate dean of the school.

For further information regarding enrolment see the section entitled 'Enrolment regulations' in the general section of this Handbook.

Continuing students

As quotas exist for entry into second year the following criteria for continuance apply:

(a) all students who pass all subjects outright will be admitted to the course of their choice
(b) those students with Faculty Passes will be admitted to a discipline but not necessarily that of their choice.

Leave of absence

Students who have enrolled in a course who wish to take leave of absence with no view to re-enrolling at the end of a specified period should apply on a Leave of Absence form. Leave of absence is granted by the associate dean of the school (or his/her nominee) or Sub Dean, First Year or Dean for faculty courses. Students who have been granted leave of absence will be notified in writing by the appropriate administrative officer. Enrolment for all subjects for the duration of the leave will be cancelled automatically.

Full-time students should note that leave of absence is normally not granted after the completion of first semester. Applications submitted after first semester are considered on their merits and student progress reports are taken into account.

Approval and publication of results

1 General

(a) The Engineering Faculty Board policy is that all engineering students are informed of their progress as soon as possible after any prescribed subject has been completed.

(b) These regulations are normally applied by the Engineering Courses committee acting as a sub-committee of the Engineering Faculty Board.

(c) In special circumstances individual subject results may be deferred on medical grounds or other reasons of hardship. Deferral of faculty results for supplementary assessment is covered under the Faculty Passing Scheme. The period of deferral is determined in the light of particular circumstances.

2 Programs of study over two semesters

(a) Results for subjects completed in first semester are approved for publication as soon as possible after the end of semester.

(b) Where a subject continues over two semesters a mid-year progress report is released by the awarding school no later than the end of the first week of second semester.

(c) Results for subjects completed in second semester are approved for publication as soon as possible after the end of semester.

3 Programs of study over one semester

(a) Second-year undergraduate publication of official results for first semester may, at the discretion of the Engineering Courses Committee be held over till the end of second semester. If so, a provisional result will be issued by the awarding school at the end of first semester.

(b) Results for subjects completed in first semester, including industrial experience, are approved for publication as soon as possible after the end of semester.

Awarding of degree with honours

Each year the Engineering Courses Committee will determine which graduating students should be awarded an honours degree.

Four categories of honours will be awarded, viz:

Honours 1
Honours 2A
Honours 2B and
Honours 3
Prizes, scholarships and awards

A complete list of the sources of financial support and the various awards available to students is given in the general section of this Handbook. Brief information on awards most likely to be of interest to engineering students is given below.

Entrance Scholarships
Details of entrance scholarships available may be obtained from the Administrative Officer, telephone 819 8456.

Industry Based Learning Scholarships
The Faculty, in conjunction with industry, offers industry based learning scholarships to the value of $8,000 per annum to full time engineering students in second and later years of their engineering degree course. Interested students should apply to the Faculty Office by November for the forthcoming year.

W.P. Brown Medal
This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course. The award is a medal and a premium of $150.

The Cray Research Award
To be awarded to the student with the best academic results and who is preparing to specialise in the computer systems engineering stream of the electrical engineering degree course. The results achieved must give the highest overall score in the student group, and be acceptable to the selection committee. $450.

Esso Prize
A prize of $500 awarded annually to the outstanding final-year mechanical engineering student.

SECV Faraday Prizes
Awarded to the students with the best academic performance in the electrical power and control engineering stream in both the final year and the penultimate year of the degree of Bachelor of Engineering (Electrical). $500 each.

FW. Green Memorial Prize
Books to the value of $50 are awarded to the most outstanding final-year engineering student graduating each year.

James Smith Memorial Prize
Books to the value of approximately $50 are awarded to the best student in structural design in the final year of the civil engineering degree course.

Harold E.R. Steele Prize
A prize of $75 is awarded to the best student in the course leading to the degree of Bachelor of Engineering with major studies in electrical power, communication and electronic, or computer systems engineering.

Major Furnace and Engineering Prize
This is awarded to the best managed final year project in mechanical engineering. The award consists of $150 and an engraved pewter mug.

Molyneux Medal
A silver medal and a prize of $30 are awarded to the student in the final year of the manufacturing engineering degree, undertaking major studies in chemical engineering, who submits the best project thesis.

I.W. Shedden Prize
Awarded to the most outstanding student to complete the degree of Master of Enterprise Innovation. This award encompasses not only academic merit, but also personal contribution to the School of Innovation and Enterprise.

Oscar Weigel exhibitions in engineering
Applicants for these awards must be qualified to enter the second or a later year of an engineering degree course to be accepted as a candidate for the degree of Master. Value – up to $400 per year and tenable for a period not exceeding five years.

Postgraduate awards

The Commonwealth Department of Education provides awards for full-time research leading to the degree of Master. The closing date for applications is 31 October in any year.

Some industrial organisations also make available awards for full-time research leading to the degree of Master. Further information may be obtained from the associate dean of each engineering school.

Continuing Education (short courses)

Swinburne has been active since 1913 in the provision of relevant engineering education for both undergraduate and postgraduate students. Swinburne still is a leader in the provision of part-time study, short courses, conferences, seminars and workshops.

In 1986, The Institution of Engineers, Australia adopted the policy to require that Engineers continue the learning process through their working life. To achieve this goal, The Institution require 150 hours of Continuing Education study over any three year period. Typical courses offered recently include:

- Precision Electrical Measurements
- Designing with Composite Materials
- Design and analysis of concrete structures
- Industrial Noise Control
- Managing with Quality
- Pacific Conference on Manufacturing
- Benchmarking and Customer Satisfaction Measurement

Swinburne arranges in-house programs to assist companies in providing training for key individuals who cannot conveniently be released for off-the-job training; or for groups of employees. This arrangement can result in significant savings in cost and time. If your company does not have the number to justify in-house training activities, your organisation can form a core group allowing additional groups of employees. This arrangement can result in significant savings in cost and time. If your company does not have the number to justify in-house training activities, your organisation can form a core group allowing additional course members to be invited from within the district.

Swinburne's in-house training services can be individually tailored to suit your company's climate, or based on our standard courses; they can augment your own training in a combined operation, designed to satisfy your particular requirements.

Further enquiries should be directed to the Manager, Continuing Education & Industrial Liaison on 819 8168.
Professional recognition of courses
The Institution of Engineers, Australia
The courses for degree of Bachelor of Engineering, in civil, electrical power and control, communication and electronic, computer systems, manufacturing, and mechanical engineering, have all received recognition by The Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.

Students who are enrolled for engineering courses at Swinburne and are at least seventeen years of age may apply to the Institution of Engineers, Australia, to become student members. Application forms are available from engineering school offices and the Engineering Faculty Office.

Other professional bodies
The course for the Bachelor of Engineering (Manufacturing) is recognised by the Institution of Production Engineers and the degree in electrical engineering is recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualification for membership.

Faculty of Engineering courses
Y050 Bachelor of Technology
The Bachelor of Technology offers a new kind of degree in the exciting areas of technological need, and an entry scheme to provide access to students who may have otherwise closed the door to careers in these areas.

Career potential
The course aims to produce graduates equipped to meet the shortage of professionals in the application of technology within business and industry and with an appropriate grounding in management education to prepare them for future roles in the management of industry and commerce. Graduates will find employment as technologists in many areas. The excellent opportunities for management studies included in and extending onto the course will lead many graduates into technological management roles.

Duration of course
The course requires three and a half years of full-time study, or its equivalent part-time, including six months industrial experience.

Admission requirements
Entry to first year
The first year of studies is common to all areas of the Bachelor of Technology and the Bachelor of Engineering (except for minor differences for students admitted under alternative entry). Admission requirements are listed under "Admission to first-year degree courses" earlier in the Engineering Faculty section of this Handbook.
For the Bachelor of Technology courses in Aviation, Fire Technology and Building Surveying, please see the information on entrance requirements, course structure, etc. contained in the appropriate School of Engineering entry.

Progress to second year
To be eligible for admission to the second year of the three-and-a-half-year course a student will be required to have satisfactorily completed the first (common) year in appropriate prerequisite subjects.

Conversion
Conversion to a Bachelor of Engineering degree will be possible after completion of the Bachelor of Technology. It will require the equivalent of at least one to one and a half academic years of work.

Combined program with Graduate Diploma in Management
The Bachelor of Technology course and the Graduate Diploma in Management may be taken as a 'combined program' in the same manner as the Bachelor of Engineering and Graduate Diploma in Management.

Industry based learning
As with all undergraduate courses within the Faculty of Engineering, this course will be offered on an industry based learning basis.

Under this strategy of applied learning — a structured program developed and supervised by an educational institution in collaboration with an employing organisation — industry based learning through relevant productive work is an integral part of a student's regular academic program and is an essential component of the final assessment.

Professional recognition
It is expected that graduates will be eligible for membership of the Institution of Engineering Associates. Under current rules, only after conversion to a Bachelor of Engineering degree would graduates be eligible for membership of the Institution of Engineers, Australia.

Course structure
The course offers a structure radically different from the norm within technological areas. It comprises:
- a common first year of core studies
- one major study and
- two minor studies
- at least one industry based learning placement (six months).

First year
This year is essentially the same as for students planning to undertake the Bachelor of Engineering course providing maximum course and career potential for students who elect, at the end of that first year, to proceed to the Bachelor of Engineering or to the Bachelor of Technology.

Not all first year subjects will be prerequisites for each of the majors and minors, prerequisites for commencing each will be separately defined. For each major sequence there will be specific first-year subject prerequisites.

Major studies
A major is defined as a set of related subjects totalling forty semester hours.

Minor studies
A minor study is defined as a set of related subjects totalling twenty semester hours.

Within that overall structure two types of programs will be offered:

Structured courses
Where students wishing to obtain a qualification designated to some particular area will be required to complete certain specified minors with a particular major. The degree carries the designation appropriate to the particular study area (e.g. Bachelor of Technology (Construction)).

Non-structured courses
Where students will select majors and accompanying minors according to their preferences. The degree would carry no area designation.

The subjects areas comprising the currently defined major and minor sequences are:
Major studies are offered in the following areas:

- Air Conditioning
- Chemical Technology
- Computer Aided Design and Manufacture
- Fire Technology
- Manufacturing Technology
- Productivity Management.

Minor studies supporting the majors will be offered in related areas.

School of Civil Engineering and Building courses

The School offers a range of tertiary courses in civil engineering, including an industry based learning degree program (cooperative), a graduate diploma and the degree of Master by research. The School also conducts an industry based learning program (cooperative) in building surveying.

The undergraduate degree course leads to a professional qualification in civil engineering which is recognised by the Institution of Engineers, Australia. The graduate diploma enables graduate engineers to undertake further specialised studies in construction technology. The degree of Master provides specialist research training in a selected topic in civil engineering, usually of importance to, and funded by industry. Continuing Education courses for professional engineers are provided from time to time in selected subjects by way of short courses. The building surveying courses meet the academic requirements for professional membership of the Australian Institute of Building Surveyors.

The School operates a mentor scheme to facilitate contact between staff and students and to provide guidance to individual students as they progress through the course. Mentors are all experienced staff members.

The School also undertakes applied research and consulting. Enquiries should be directed to the Associate Dean or School Administrative Officer.

Courses offered

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>C050</td>
<td>Degree of Bachelor of Engineering (Civil)</td>
</tr>
<tr>
<td>C051</td>
<td>Degree of Bachelor of Technology (Building Surveying)</td>
</tr>
<tr>
<td>C082</td>
<td>Graduate Diploma in Civil Engineering Construction</td>
</tr>
<tr>
<td>C092</td>
<td>Degree of Master of Technology (Construction)</td>
</tr>
<tr>
<td>Y096</td>
<td>Degree of Master of Engineering</td>
</tr>
<tr>
<td>Y006</td>
<td>Degree of Doctor of Philosophy</td>
</tr>
</tbody>
</table>

Career potential

Civil engineering offers a creative career for men and women in many differing areas of service to the community.

Graduates work as planners, designers, administrators, research engineers and consultants in a wide range of specialist fields, including:

- structural and bridge engineering
- foundation engineering, geology, soil and rock mechanics
- water engineering
- transportation engineering
- construction engineering
- municipal engineering
- environmental engineering and urban planning.

Their work is interesting, rewarding and challenging and offers opportunities for both indoor and outdoor work, in Australia and overseas.

Civil engineers qualify professionally by completing a tertiary course recognised by the Institution of Engineers, Australia, followed by three years of suitable professional experience. The twelve months of industry based learning (work experience) is counted as six months of postgraduate experience for this purpose.

Swinburne civil engineering graduates find employment with consulting firms, private industry, public authorities, and state government departments and municipalities.

Other careers

Although most graduates enter the civil engineering profession, intending students should realise that a civil engineering course also provides an excellent basis for a successful career in many other areas of industry and management.

C050 Bachelor of Engineering (Civil)

This course of study is undertaken by an industry based learning (cooperative) program extending over four-and-a-half years and including two semesters spent working with professional civil engineers in industry.

The course is a general one which gives a good grounding in civil engineering. Some specialisation occurs in the later years of the course when students choose electives from a range of specialist topics available.

Part-time study

The course may be completed by part-time study. A few subjects are available as evening subjects.

Structure of degree course

The degree course consists of seven academic semesters at Swinburne and two semesters in industry. The total length of the course is four-and-a-half years.

In the third and fourth year, students spend one semester of each year at Swinburne and the remainder working in industry. Employment is arranged by Swinburne and students receive a salary approximately two-thirds of that of a graduate engineer. Students benefit greatly from this first-hand industrial experience and liaison is maintained between mentor, employer and student.

The fifth year, which consists of only one eighteen week semester, is spent at Swinburne.

Course structure (1990 syllabus)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 1</td>
</tr>
<tr>
<td>CE116</td>
<td>Engineering - Solid Mechanics</td>
</tr>
<tr>
<td>EE181</td>
<td>Engineering - Electronics and Computing</td>
</tr>
<tr>
<td>MM121</td>
<td>Engineering - Energy Systems</td>
</tr>
<tr>
<td>MM122</td>
<td>Engineering - Chemistry and Materials</td>
</tr>
<tr>
<td>MM123</td>
<td>Engineering - Graphics and CAD</td>
</tr>
<tr>
<td>EF180</td>
<td>Engineering - Physics</td>
</tr>
<tr>
<td>EF190</td>
<td>Professional Studies</td>
</tr>
<tr>
<td>SM199</td>
<td>Engineering Mathematics</td>
</tr>
</tbody>
</table>

Total: 22 23
The course is intended to prepare students for the profession of building surveying. It meets the educational requirements for membership of the Australian Institute of Building Surveyors and the educational requirements of the Victorian Building Control Qualifications Board, which licenses Building Surveyors in the State of Victoria.

The course was introduced at the request of the AIBS and was designed to enable future members of the profession to cope with anticipated changes in building technology, materials and statutory regulations.

The course is coordinated by the School of Civil Engineering and Building. It is interdisciplinary in nature, with a teaching input from a number of departments.

Career potential
At present, about eight of every ten graduates in building surveying enter the municipal sphere and the others are absorbed in the building industry.

The building surveyor in a municipality is the council's technical officer in matters pertaining to buildings. Duties include the giving of advice to council on various parliamentary ads and regulations, council bylaws and regulations relevant to building, together with their administration as required by law and by council. The building surveying department is responsible for checking of plans and computations submitted for council approval and for the carrying out of inspections of buildings during construction, alteration and demolition.

Regulations pertaining to the course
Regulations relating to the course are as for other engineering undergraduate courses and are set out at the beginning of this book.

Structure of the course
The Bachelor of Technology in Building Surveying is structured on an industry based learning program (co-operative), and consists of six academic semesters at Swinburne and two semesters in industry. The total length of the full-time course is four years.

First and second years are spent full-time at Swinburne. In third year, students spend the entire year working in industry. Employment is arranged by Swinburne and students are paid by the employer. Students benefit greatly from this first-hand experience and a consistent liaison is maintained between the mentor, the employer, and the student.

The fourth year is spent at Swinburne.

Part-time study
The course can be completed by part-time study but subjects are not available in the evening. Students should consult with staff to plan a part-time program of day classes from the required subjects of the course.

Eligibility to apply for entry
Successful completion of VCE or equivalent including a grade of E or better in English (units 1, 2, 3 and 4) and 6 units of Mathematics (at least two as units 3 and 4), Physics (units 1 and 2), and Chemistry (units 1 and 2). Bonus points will be awarded for additional units (3 and 4) in Mathematics, Physics and Chemistry.

Victorian Certificate of Education (Tertiary Orientation Program)
VCE(TOP) courses are considered on the basis of a course of study equivalent to a Year 12 course. Prerequisite and recor-
mended subjects are those equivalent to the Year 12 subjects listed above.

Persons who do not hold the qualifications stated above, or their equivalent, may be required to sit for a special entry test to determine eligibility. This test is normally held early in February.

An interview may be required for the persons who do not hold the qualifications stated above.

Rsons who complete satisfactorily, a science/engineering VCE(TOP) course in the Swinburne TAFE sector which includes subjects equivalent to the prerequisite and recommended Group 1 subjects are given guaranteed entry.

**Course structure (1992 syllabus)**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE114</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CE173</td>
<td>Construction</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>CE192</td>
<td>Statutory Control</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>CE196</td>
<td>Communications</td>
</tr>
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</tr>
<tr>
<td>MM169</td>
<td>Services</td>
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<td>2</td>
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<td>MP180</td>
<td>Construction Materials</td>
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<td>3</td>
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<tr>
<td>SM193</td>
<td>Mathematics</td>
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<tr>
<th>Year 2</th>
<th>Hours per week</th>
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</thead>
<tbody>
<tr>
<td>CE204</td>
<td>Computer Application</td>
</tr>
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<td>4</td>
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<tr>
<td>CE243</td>
<td>Land Surveying</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>CE256</td>
<td>Structural Design</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>CE276</td>
<td>Construction</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>CE297</td>
<td>Temporary Structures</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CE283</td>
<td>Geomechanics</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>*CE294</td>
<td>Statutory Control</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>CE297</td>
<td>Management</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM269</td>
<td>Services</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MP280</td>
<td>Construction Materials</td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th>Year 3</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE399</td>
<td>Industry Based Learning</td>
</tr>
<tr>
<td>48 weeks</td>
<td></td>
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<tr>
<td>Year 4</td>
<td>Hours per week</td>
</tr>
<tr>
<td>CE404</td>
<td>Computer Applications</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE454</td>
<td>Structural Design</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE470</td>
<td>Services</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CE477*</td>
<td>Construction</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CE478</td>
<td>Fire Technology</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CE490</td>
<td>Construction Management</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CE496*</td>
<td>Management Control</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

* Part-time students may undertake these subjects in their component parts — see subject outline for details.

**C082 Graduate Diploma in Civil Engineering Construction**

This course can be undertaken by attending components of the Master of Technology (Construction). Details are available from the School.

**C092 Master of Technology (Construction)**

The main aim of the course is to provide graduates of proven academic ability for future roles in managing technology and human resources in construction and building operations. It is proposed to achieve this aim by providing a structured study of advanced management and engineering techniques in the fields of construction and building.

The course aims to develop the following:

(a) skill at allocation, organisation and direction of manpower and material resources

(b) awareness of and ability to apply modern construction technology

(c) understanding of the financial considerations of project funding

(d) understanding of human resource management on construction sites

(e) knowledge of the bidding process and other aspects of economic decision making

(f) appreciation of contractual obligations and risks

(g) quality management.

**Duration of program**

This course has been designed to take place over a one and a half year period on a full-time basis. Students may commence their studies in either the first or second semesters of any year and spend the first two semesters engaged in course work. The course can also be undertaken part-time over six semesters.

**Prerequisites**

Candidates for the degree of Master of Technology shall:

i) have completed the degree of Bachelor of Engineering, or equivalent qualifications

or

ii) have completed successfully a four year degree in Building, or Architecture

(iii) have qualifications and experience which, in the opinion of the Engineering Faculty Board, are of a satisfactory standard and are a suitable preparation for study in the Masters program

and

(iv) prefererably have appropriate experience.

**Management Topics**

<table>
<thead>
<tr>
<th>Management Topics</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE690</td>
<td>Civil Eng. Project Control</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE693</td>
<td>Building Admin. &amp; Law</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE691</td>
<td>Civil Eng. Management</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE692</td>
<td>Communications</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE792</td>
<td>Health &amp; Safety in Construction</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>CE793</td>
<td>Contract &amp; Law</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CE794</td>
<td>Financial Management</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>CE791</td>
<td>Construction Management</td>
</tr>
<tr>
<td>2</td>
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<table>
<thead>
<tr>
<th>Total for Management &amp; Construction Technology</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
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</tr>
</tbody>
</table>

Either:

**Minor Strand (Civil Engineering Construction)**

<table>
<thead>
<tr>
<th>Minor Strand (Civil Engineering Construction)</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE670</td>
<td>Construction Technology</td>
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<tr>
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<td>2</td>
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<tr>
<td>CE772</td>
<td>Construction Technology</td>
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<tr>
<td>CE773</td>
<td>Research Project</td>
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**Total**

Sub Total

<table>
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<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

See over page for alternative.
The higher degree programs currently available require the contact between staff and students and to provide guidance to Master of Engineering or Doctor of Philosophy. Mentors are all experienced staff members.

The school offers courses leading to professional qualifications in electrical power and control engineering, communication and electronic engineering and computer systems engineering. In addition, continuing education courses in selected subjects for professional engineers are provided from time to time. Modern laboratory facilities are available for undergraduate teaching, staff research and consulting. Separate laboratories are devoted to electric circuits, electronics, advanced electronics, communications, control systems and computing, electrical machines, power systems, advanced computing systems, and student design projects. New computer systems laboratories provide facilities for the computer systems engineering stream.

A mentor scheme is operated by the school to facilitate contact between staff and students and to provide guidance to individual students, as they progress through the course. Mentors are all experienced staff members.

The school undertakes applied research and consulting and staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the Associate Dean.
## Course structure (1990 Syllabus)

### First year (Y057)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE116 Engineering — Solid Mechanics</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE181 Engineering — Electronics and Computing</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MM121 Engineering — Energy Systems</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MM122 Engineering — Chemistry and Materials</td>
<td>3</td>
<td>3</td>
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<tr>
<td>MM123 Engineering — Graphics and CAD</td>
<td>2.5</td>
<td>2.5</td>
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<tr>
<td>EF180 Engineering — Physics</td>
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<td>2.5</td>
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<tr>
<td>EF190 Professional Studies</td>
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<tr>
<td>SM199 Engineering Mathematics</td>
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<td></td>
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**Total Hours:** 22 23

### Second year (E050) (unstreamed)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE254 Electrical Design</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>EE258 Electrical Machines</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE263 Computer Systems Engineering</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE263 Communication Principles</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>EE283 Electrical Circuits</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE287 Electronics</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SM294 Engineering Mathematics</td>
<td>4</td>
<td>4</td>
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<tr>
<td>SP294 Engineering Physics</td>
<td>2</td>
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</table>

**Total Hours:** 22 22

### Third year (E050) (unstreamed)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE300 Industrial Experience</td>
<td>24 weeks</td>
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<tr>
<td>EE363 Computer Systems Engineering</td>
<td>4</td>
<td></td>
<td></td>
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<tr>
<td>EE383 Electromagnetic Fields</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE384 Electrical Power &amp; Machines</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE386 Electronics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE388 Communications</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE389 Linear Systems &amp; Control</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM394 Engineering Mathematics</td>
<td>3</td>
<td></td>
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</tr>
</tbody>
</table>

**Total Hours:** 22

### Fourth year

#### Computer Systems Engineering Stream (E054)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE402 Management Fundamentals</td>
<td>3*</td>
<td>3*</td>
<td></td>
</tr>
<tr>
<td>EE459 Electrical Design</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE465 Engineering Systems Software</td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE467 Computer Communications</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>EE474 Computer Systems Engineering</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE489 Control Systems</td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td>2*</td>
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**Total Hours:** 22

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>24 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE400 Industrial Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE403 Engineering Project Management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical Power and Control Engineering Stream (E055)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE402 Management Fundamentals</td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE456 Electrical Design</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE465 Engineering Systems Software</td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE475 Electrical Power and Machines</td>
<td>5</td>
<td></td>
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</tr>
<tr>
<td>EE476 Electronics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE489 Control Systems</td>
<td>3*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td>2*</td>
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**Total Hours:** 22

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>24 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE400 Industrial Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE403 Engineering Project Management</td>
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<td></td>
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</tbody>
</table>

### Fifth year

#### Computer Systems Stream (E054)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE502 Management Practice 1</td>
<td>3*</td>
<td></td>
</tr>
<tr>
<td>EE556 Project</td>
<td>A**</td>
<td></td>
</tr>
<tr>
<td>EE561 Computer Systems Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE562 Computer Electronics</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EE563 Advanced Computer Techniques</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE598 Digital Systems &amp; Control</td>
<td>2*</td>
<td></td>
</tr>
</tbody>
</table>

**Total Hours:** 22

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>24 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE400 Industrial Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE403 Engineering Project Management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Electrical Power and Control Engineering Stream (E055)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE502 Management Practice 1</td>
<td>3*</td>
<td></td>
</tr>
<tr>
<td>EE556 Project</td>
<td>4**</td>
<td></td>
</tr>
<tr>
<td>EE559 Electrical Machine Drives</td>
<td>5</td>
<td></td>
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<tr>
<td>EE576 Electronics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE597 Electrical Power Systems</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>EE598 Digital Systems and Control</td>
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<td></td>
</tr>
</tbody>
</table>

**Total Hours:** 22

* Subjects common to all streams.

** Done externally while on Industrial Experience.

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287
Communication and Electronic Engineering Stream (EO56)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE502</td>
<td>Management Practice 1</td>
<td>3*</td>
</tr>
<tr>
<td>EE544</td>
<td>Electronic Communications System</td>
<td>3</td>
</tr>
<tr>
<td>EE545</td>
<td>Electronics</td>
<td>4</td>
</tr>
<tr>
<td>EE548</td>
<td>Communications</td>
<td>6</td>
</tr>
<tr>
<td>EE556</td>
<td>Project</td>
<td>4**</td>
</tr>
<tr>
<td>EE598</td>
<td>Digital Systems &amp; Control</td>
<td>2**</td>
</tr>
</tbody>
</table>

* Common to all streams.
** Project time is 4 hours/week for 14 weeks and 22 hours/week for 4 weeks.

With the approval of the Associate Dean of the School, students may be permitted to undertake an additional subject from the Arts or Business Faculties as an optional non-technical elective during the course.

EO85 Graduate Diploma in Computer Systems Engineering

This part-time course is intended to produce graduates with a set of computer systems engineering skills, based soundly on engineering and computer science principles.

There is a demand for continuing professional education in this field from qualified engineers, who require enhancement of skills in computer science and from computer professionals who require skills in disciplines such as electronics, communications and control.

Some diversity is offered in the common second year by the opportunity to choose elective subjects and individual design projects.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, together with relevant experience.

The course will only be available on a part-time basis, over four semesters.

Course structure (1993 Syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>EE641</td>
<td>Fundamentals of Computing 3</td>
</tr>
<tr>
<td>EE642</td>
<td>Data Structure 3</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>EE643</td>
<td>Computer Systems Software 3</td>
</tr>
<tr>
<td>EE644</td>
<td>Computer Systems Design 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>EE741</td>
<td>Computer Systems and Software Engineering 4</td>
</tr>
<tr>
<td>EE742</td>
<td>Computer Communications and Control 4</td>
</tr>
<tr>
<td>or EE745</td>
<td>High-Performance Computer Architectures 4</td>
</tr>
<tr>
<td>or EE746</td>
<td>Parallel Programming Techniques 4</td>
</tr>
<tr>
<td>or EE747</td>
<td>Discrete Time Control Systems 4</td>
</tr>
<tr>
<td>EE748</td>
<td>Computer Control of Dynamic Systems 4</td>
</tr>
</tbody>
</table>

or

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE749</td>
<td>Communication Networks</td>
<td>4</td>
</tr>
<tr>
<td>EE750</td>
<td>Digital Spectral Estimation</td>
<td>4</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE744</td>
<td>Design and Project</td>
<td>8</td>
</tr>
</tbody>
</table>

Y097 Master of Engineering
Y007 Doctor of Philosophy

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidacy for the degree of Master of Engineering or Doctor of Philosophy.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and PhD appear in the 'Procedures and Regulations' chapter of this Handbook, and application forms are available from the Office of Research and Graduate Studies.

School of Innovation and Enterprise courses

The School of Innovation and Enterprise was established in 1991 and is the newest School in the Faculty.

The School is designed as a self-contained entity dedicated to excellence in innovative education. The School is currently housed within the Faculty of Engineering. This strategic alliance adds value to students' learning experiences by exposing them to current technologies, and to the opportunities at the forefront of Australian science and technology.

The School has built its own pool of full and part-time professional educators dedicated to teaching the management of innovation to practising managers. A key feature of all its programs is the use of 'pracademia' (team teaching between a practitioner and an academic).

The School's aims are to provide its students with the necessary skills and understanding to start and grow businesses, and for existing corporations to introduce an innovative culture.

There are currently a number of students undertaking PhDs and Masters by research, and the School has an active consultancy division.

In 1993, the School commenced teaching two of its programs in Singapore.

Courses offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y072</td>
<td>Graduate Certificate in Enterprise Management</td>
</tr>
<tr>
<td>Y073</td>
<td>Graduate Certificate in Training Management</td>
</tr>
<tr>
<td>Y081</td>
<td>Graduate Diploma in Management (by coursework)</td>
</tr>
<tr>
<td>Y082</td>
<td>Graduate Diploma in Entrepreneurship and Innovation (by coursework)</td>
</tr>
<tr>
<td>Y082X</td>
<td>Graduate Diploma in Entrepreneurship and Innovation (Singapore program) (by coursework)</td>
</tr>
</tbody>
</table>
The program provides a sound theoretical base in all four areas and the ability to apply that theory to management of an innovative profit centre, new product development, systems change or other project requiring professional management of activities new to, or different from, the established activities of the firm.

The program is designed for employees of organisations who have been charged with responsibility for creating and operating a genuinely new venture with high growth potential. The new venture may challenge existing company management practices and will require the ability to manage the innovation process.

The program also provides for articulation of accredited units into higher level degree programs offered by the School of Innovation and Enterprise.

Admission requirements
Applicants should comply with one of the following:
- A first degree in any discipline and commitment by an employee to a task, role or project requiring skills in management of innovation, are able to take up management positions more quickly after graduation, become more innovative in their professional practices and hence are more likely to contribute significantly to their work, their profession, the economy and society.
- Applicants who lack a first degree may be admitted to the program at the considered discretion of the Dean of the Faculty.

Duration of course
The program is designed to be completed within one calendar year of commencement of the first unit.

Course structure
Units are block taught in a modular structure and the course is as follows:

| Code  | Unit Title                          | Hours
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EF81CG</td>
<td>Marketing For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF811G</td>
<td>Financial Planning For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF813G</td>
<td>Organising For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF814G</td>
<td>Strategy and Business Planning</td>
<td>42</td>
</tr>
</tbody>
</table>

Each subject is taught in two x three-day block modules (i.e. seven hours per day).

Degree of Master of Enterprise Innovation (by coursework)
Degree of Master of Enterprise Innovation (Singapore program) (by coursework)
Degree of Master of Enterprise Innovation (by research)
Degree of Doctor of Philosophy
Graduate Certificate in Enterprise Management
Career potential
This program recognises the need to educate middle managers within existing organisations in the management of innovation based on four key skill areas:
- marketing aspects of innovation management
- organisational behavioural aspects of innovation management
- financial planning (cash flow projection and management)
- innovation strategy leading to an integrated business plan.

The program provides a sound theoretical base in all four areas and the ability to apply that theory to management of an innovative profit centre, new product development, systems change or other project requiring professional management of activities new to, or different from, the established activities of the firm.

The program is designed for employees of organisations who have been charged with responsibility for creating and operating a genuinely new venture with high growth potential. The new venture may challenge existing company management practices and will require the ability to manage the innovation process.

The program also provides for articulation of accredited units into higher level degree programs offered by the School of Innovation and Enterprise.

Admission requirements
Applicants should comply with one of the following:
- A first degree in any discipline and commitment by an employee to a task, role or project requiring skills in management of innovation, are able to take up management positions more quickly after graduation, become more innovative in their professional practices and hence are more likely to contribute significantly to their work, their profession, the economy and society.
- Applicants who lack a first degree may be admitted to the program at the considered discretion of the Dean of the Faculty.

Duration of course
The program is designed to be completed within one calendar year of commencement of the first unit.

Course structure
Units are block taught in a modular structure and the course is as follows:

| Code  | Unit Title                          | Hours
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EF81CG</td>
<td>Marketing For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF811G</td>
<td>Financial Planning For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF813G</td>
<td>Organising For Innovation</td>
<td>42</td>
</tr>
<tr>
<td>EF814G</td>
<td>Strategy and Business Planning</td>
<td>42</td>
</tr>
</tbody>
</table>

Each subject is taught in two x three-day block modules (i.e. seven hours per day).

Graduate Certificate in Training Management
Career potential
The program is designed for people interested in the use and effects of training in the innovation process but will be of particular value to employees of organisations who have been charged with the responsibility of developing training interventions to support organisational change.

The courses in the program cover four key aspects of training management:
- principles and planning of training interventions
- design and development of training programs
- innovation and training
- administration and evaluation of training.

The program provides a sound theoretical base in all four areas and the major projects and exercises undertaken in the program will provide the opportunity for participants to apply their learning to their own or other organisations. A tangible outcome of the program will be some actual training programs designed and detailed ready for implementation.

The program provides for articulation of accredited units into higher level degree programs offered by the School of Innovation and Enterprise.

Admission requirements
Applicants should comply with one of the following:
- A first degree in any discipline and commitment by an employee to a task, role or project requiring skills in training management.
- Applicants who lack a first degree may be admitted to the program at the considered discretion of the Dean of the Faculty.

Duration of course
The program is designed to be completed within one calendar year of commencement of the first unit.

Course structure
Units are block taught in a modular structure and the course is as follows:

| Code  | Unit Title                          | Hours
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EF820G</td>
<td>Planning of Training Programs</td>
<td>36</td>
</tr>
<tr>
<td>EF821G</td>
<td>Program Design</td>
<td>36</td>
</tr>
<tr>
<td>EF822G</td>
<td>Training Innovation and Evaluation</td>
<td>36</td>
</tr>
<tr>
<td>EF823G</td>
<td>Administration of Training</td>
<td>36</td>
</tr>
</tbody>
</table>

Each course is taught in two x three-day block modules (i.e. eight hours per day), plus a half day of examination and valuation (four hours).

Graduate Diploma in Management
Career potential
The course is designed to prepare professionals who, being more extensively educated in management of enterprise and innovation, are able to take up management positions more quickly after graduation, become more innovative in their leadership of Australian enterprise, have achieved heightened goals, are more able to improve their individual professional practices and hence are more likely to contribute significantly to their work, their profession, the economy and society.

Studies include the environmental and social impacts of successful professional practice, personal skills such as speaking, negotiating, communicating, team working and leadership as well as the more conventional business, financial and marketing studies.

The course work and the case studies at graduate level relates management principles and practice particularly to the technology learnt during an undergraduate course.
Admission requirements

(a) The completion of a degree or diploma together with at least two years industrial experience.
(b) The completion of the Bachelor of Engineering or Bachelor of Technology degree offered by the Faculty of Engineering at Swinburne undertaken as an industry based learning program incorporating integrated periods of industrial experience.
(c) The completion of another Bachelor of Engineering degree together with at least two years of relevant work experience at a suitable level of responsibility within an engineering field after completion of the degree.
(d) A limited number of applicants not meeting the above criteria may be admitted after interview on the basis of considerable relevant experience and level of responsibility in industry or business.

Applications close 15 November for the following year.

Duration of course
The course is undertaken by one year of full-time study or two-and-a-half years of part-time study. The course, when combined with the Bachelor of Engineering, or Bachelor of Technology, requires only a further six months full-time or one-and-a-half years part-time, after the completion of the four-and-a-half-year degree.

In its combined mode, the course will offer a 'fast-track' to management education for graduates of the Engineering Faculty at Swinburne.

Course structure
Wherever possible session presentations maximise application of 'pracademia', where subjects are team-taught by academics and practitioners to ensure focus is squarely fixed on current management practice.

The course is broken into three distinctive groups: introductory, extending and integrating. Under normal circumstances, Swinburne Bachelor of Engineering/Technology graduates are exempt from the introductory group, but must complete the extending and integrating groups of subjects.

<table>
<thead>
<tr>
<th>Introductory group</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF611 Management Fundamentals (1 sem)</td>
<td>4</td>
</tr>
<tr>
<td>EF614 Management Practice (1 sem)</td>
<td>4</td>
</tr>
<tr>
<td>EF612 Engineering Management (2 sem)</td>
<td>2</td>
</tr>
<tr>
<td>EF613 Industrial Engineering (2 sem)</td>
<td>2</td>
</tr>
<tr>
<td>EF620 Human Aspects (1 sem)</td>
<td>2</td>
</tr>
<tr>
<td>EF621 Financial and Legal Aspects (1 sem)</td>
<td>3</td>
</tr>
<tr>
<td>EF623 Marketing (1 sem)</td>
<td>3</td>
</tr>
</tbody>
</table>

Two chosen from:

<table>
<thead>
<tr>
<th>Extending group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EF622 Engineering Management</td>
<td></td>
</tr>
<tr>
<td>EF625 Computing — Business Applications and Systems</td>
<td></td>
</tr>
<tr>
<td>EF626 Computing — Engineering Applications and Systems</td>
<td></td>
</tr>
<tr>
<td>EF629 Sales Management</td>
<td></td>
</tr>
<tr>
<td>EF630 Manufacturing Management</td>
<td></td>
</tr>
<tr>
<td>EF631 Physical Distribution Management</td>
<td></td>
</tr>
<tr>
<td>EF632 Corporate Communications</td>
<td></td>
</tr>
<tr>
<td>EF633 Energy Management</td>
<td></td>
</tr>
<tr>
<td>EF634 Civil Engineering Management</td>
<td></td>
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<tr>
<td>EF635 Construction Technology</td>
<td></td>
</tr>
<tr>
<td>EF711 Product Development and Life Cycles</td>
<td></td>
</tr>
<tr>
<td>EF712 Opportunity and Feasibility Analysis</td>
<td></td>
</tr>
<tr>
<td>EF713 The Entrepreneurial Organisation</td>
<td></td>
</tr>
<tr>
<td>MM714 Risk Analysis</td>
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</tr>
<tr>
<td>MM715 Risk Engineering</td>
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</tr>
<tr>
<td>MM716 Risk Evaluation</td>
<td></td>
</tr>
<tr>
<td>MM718 Risk Finance Management</td>
<td></td>
</tr>
</tbody>
</table>

Electives run for either two or three hours per week for one semester. Electives can run in either semester and are dependent on demand.

Integrating group

| EF641 Management Practice (1 sem) | 6 |
| EF624 Management Practice (1 sem) | 6 |

1 Offered full-time in semester two only.
2 Only available to participants with at least three years full-time work experience; offered part-time in semester one only.

The course essentially takes a problem based approach, the learning being 'end' rather than 'means' driven.

The extensive use of Australian and relevant international case studies throughout the program ensures that subjects are seen as opportunities to explore in more depth the analysis of various aspects of management science.

**Y082 Graduate Diploma in Entrepreneurship and Innovation**

**Y082X Graduate Diploma in Entrepreneurship and Innovation (Singapore program)**

This program has been developed for people who intend to start new, innovative businesses or to play a leading role in an entrepreneurial unit of an established company.

Business and government initiatives for future technological development should be enhanced as a result of:

(a) more inventions or service concepts commercialised and developed in Australia and with export potential;
(b) the training of young technocrats to be proactive in the search for change; for the seeking out of ideas and the subsequent development of those which appear promising; and
(c) the retention of venture capital in Australia.

The main aim is to train graduates from diverse disciplines in the theoretical and practical aspects of the commercialisation of an invention beginning with a valid prototype or adequate conceptual model.

The course should be of interest not only to potential entrepreneurs but also to 'entrepreneurial professionals' and 'friends of entrepreneurs'. This includes people with an entrepreneurial outlook who wish to stay within an organisation and practise entrepreneurship therein. Students are taught to identify 'what business area they are in' and to evaluate 'whether the opportunity will result in a profitable business'. This is achieved through an integrated program of subjects.

**Admission requirements**

All applicants should comply with one of the following:

(a) the completion of a degree or diploma in any discipline with experience in new business creation
(b) a limited number of applicants not meeting the requirements above may be admitted after interview on the basis of considerable relevant experience and level of responsibility in industry or business.

In selecting students for the course, the course convenor takes into consideration the balance of skills required for
team participation and hence attendance at an interview may be required.

Applications close 15 November for the following year.

**Duration of course**

The course is designed to be completed after two years of part-time study.

Classes are held in the evening and the usual requirement for attendance is two nights per week.

Team teaching is used in most subjects as well as extensive input from specialist industry personnel.

**Course structure (1991 syllabus)**

<table>
<thead>
<tr>
<th>Year 1</th>
<th></th>
<th>Weekly contact hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sem 1</td>
</tr>
<tr>
<td>EF713</td>
<td>The Entrepreneurial Organisation</td>
<td>3</td>
</tr>
<tr>
<td>EF715</td>
<td>Accounting for New Ventures</td>
<td>3</td>
</tr>
<tr>
<td>EF711</td>
<td>Product Development and Life Cycles**</td>
<td>3</td>
</tr>
<tr>
<td>EF812</td>
<td>Entrepreneurship, Law and Ethics</td>
<td>3</td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF810</td>
<td>New Venture Marketing</td>
<td>3</td>
</tr>
<tr>
<td>EF712</td>
<td>Opportunity and Feasibility Analysis**</td>
<td>3</td>
</tr>
<tr>
<td>EF811</td>
<td>New Venture Financial Planning</td>
<td>3</td>
</tr>
<tr>
<td>EF814</td>
<td>The Business Plan</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>** Presented in block teaching mode generally on a Friday and Saturday</td>
<td></td>
</tr>
</tbody>
</table>

**Master of Enterprise Innovation (Singapore program)**

The call for a new kind of education program for senior management has been rising in Australia over the past few years. This Master's Degree by coursework provides a fresh approach.

This course is built upon the Faculty's pioneering work in Enterprise Innovation through its educational initiatives, its involvement in the Victorian Innovation Centre and the Victorian Enterprise Workshop program.

The course aims to prepare students currently engaged in, or about to embark upon, careers in senior management, with the skills necessary to take their organisations into new areas of activity. It provides the student with an in-depth knowledge of management, but has an outward looking aspect. The graduate is not a mere administrator of a business, but is equipped with the specialist management and administrative skills necessary to effectively manage a productive commercial enterprise, and also to lead it into new fields.

**Admission requirements**

Applicants should comply with one of the following:

(a) have completed a degree in a professional field at a recognised University or College preferably at honours level;

(b) have completed the Graduate Diploma in Entrepreneurship and Innovation or the Graduate Diploma in Management, at distinction level or above;

(c) have such other qualifications or experience which, in the opinion of the selection committee, are of a satisfactory standard and are suitable preparation for entry to the program.

In selecting students for the course, the selection committee takes into consideration the balance of skills required for team participation and hence attendance at an interview may be required.

Applications close 15 November for the following year.

**Admission with advanced standing**

Students who have completed Swinburne's Graduate Diploma in Entrepreneurship and Innovation or the Graduate Diploma in Management will be given full credit for one year of the program.

**Duration of course**

The course is designed to be completed after three years of part-time study. Continuing students from the Graduate Diploma in Entrepreneurship and Innovation or the Graduate Diploma in Management will complete the program with an additional two years of part-time study.

**Course structure**

Essentially the course will take a problem-based approach, the learning being 'end' rather than 'means' driven. The range of subjects included has been chosen to satisfy the educational needs of those who will manage for growth. Australian case studies form a major part of the teaching and learning techniques as will preparation of business plans.

All subjects are conducted on an inter-disciplinary, team teaching basis with heavy input from industry personnel and a number of units in the later years are block taught.

**First year**

The first year provides the hard-edged tools which enable students to produce a fully integrated business plan for a new venture.

**Year 2** (all students)

The second year focuses on the fundamental tools acquired in year one to cover a range of difficult topics in the venture development area by means of intensive case study and practical work culminating in the production of a second and more sophisticated business plan.

**Third year** (all students)

The final year provides skills in the important areas of corporate entrepreneurship, a challenging course which stresses the integration of skills in professionally solving recurring problems in high growth business management and the production of a short research thesis in an aspect of the Australian entrepreneurship environment.
School of Mechanical and Manufacturing Engineering courses

The School offers courses leading to professional qualifications in mechanical and manufacturing. The manufacturing engineering degree program provides major study strands in production and chemical engineering. The degree courses provide a thorough education in engineering science principles and applications. With these principles the course combines a broad span of studies, such as economics, psychology, human engineering, administration, and communication techniques, important to a professional engineer.

Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue and hybrid computers. There is a strong emphasis on the teaching approach and use of tutorial laboratory work.

The undergraduate courses in mechanical and manufacturing engineering are industry based learning programs which enable a student to gain some industrial experience during the course. To qualify for the degree, each student must complete two periods of approved industrial experience supervised by both Swinburne engineering staff and engineers in industry. This is arranged in the third and fourth years of study. The experience gained is of considerable value in providing opportunities to learn from practising engineers and in helping to consolidate the more formal theoretical work undertaken at Swinburne. The School of Mechanical and Manufacturing Engineering gratefully acknowledges the assistance of engineers in many companies and government departments whose support has greatly enhanced the value of these periods of industry based learning.

Master of Engineering degree programs are available by research in selected areas of study and by coursework in the area of computer integrated manufacturing.

Graduate diploma courses are conducted in air-conditioning, chemical engineering, biochemical engineering, CAD/CAM, CIM, maintenance engineering, manufacturing technology and risk management.

In addition to the complete courses of study above, the school is responsible for teaching energy systems, engineering management, engineering drawing and engineering materials in engineering undergraduate courses conducted by other schools. Continuing education courses are provided from time to time in selected areas.

Courses offered

- Bachelor of Technology (Aviation) (M055)
- Degree of Bachelor of Engineering (Manufacturing) (P050)
- Degree of Bachelor of Engineering (Mechanical) (M050)
- Graduate Diploma in Air-Conditioning (P082)
- Graduate Diploma in CAD/CAM (P085)
- Graduate Diploma in Chemical Engineering (P083)
- Graduate Diploma in CIM (P087)
- Graduate Diploma in Maintenance Engineering (M081)
- Graduate Diploma in Manufacturing Technology (P081)
- Graduate Diploma in Risk Management (M083)
- Degree of Master of Technology (Computer Integrated Manufacture) (P093)
- Degree of Master of Engineering (Computer Integrated Manufacture) by coursework and thesis (P091)
- Degree of Master of Engineering (Manufacturing) by research (Y098)
- Degree of Master of Engineering (Mechanical) by research (Y099)
- Degree of Doctor of Philosophy (Y008)

Career potential

Mechanical engineering

Mechanical engineering may be defined as a profession in which a knowledge of mathematical and natural sciences gained by study, experience and practice is applied, with judgement and regard for the conservation of natural order, to develop ways to use the material and energy resources available, for the benefit of mankind.

Although, in Australia, it is a relatively new area of employment for women, those entering the field of mechanical engineering have found it offers excellent career opportunities.

Manufacturing/Production/Chemical engineering

Manufacturing engineers are engaged in a wide variety of industries and organisations including manufacture of aircraft, automobiles, appliances, chemicals, food, plastics, ceramics, textiles and clothing. They are also involved in goods distribution and retailing organisations.

Their activities are wide-ranging: factory management; operations and production planning; quality control; design of tooling, products and processes; materials handling; research and development.

The undergraduate programs leading to the award of the degree of Bachelor of Engineering (Manufacturing) are designed to prepare the student for a professional career in any field of manufacturing.

Developments in Australian industry, particularly towards increased productivity and the use of more sophisticated manufacturing techniques and control systems, including the use of computer-based systems, indicates that for many years the demand for manufacturing engineers will exceed the number available.
**M055 Bachelor of Technology (Aviation)**

This three year full-time degree course prepares students for a career in the aviation industry as either professional pilots or in other professional capacities. Skill training and education processes are weighted equally in this course where there is need to provide a high level of both flying prowess and the ability to solve problems through the application of methodical and rational thinking.

The course incorporates the theory subjects required by the Australian Civil Aviation Authority (CAA) up to Airline Transport Pilot Licence (ATPL) standard. Students who successfully complete this course are awarded the degree of Bachelor of Technology (Aviation) and those who undertake the flying hours necessary will also gain a Commercial Pilot Licence (CPL).

The objectives of this course are to provide professional, tertiary training for the aviation industry in general, and for pilots in particular. During the three year duration of the course, adequate time and facilities are provided to enable students to undertake the flying training necessary to reach commercial pilot standard. Additional flying training to suit particular needs, such as instructor, instrument or agricultural ratings is also available.

Strong emphasis will be placed on engineering aspects of aviation and flying, and a strong sense of practical problem solving will be engendered in students. Various motivational subjects will be included to maintain a high level of dedication in students.

### First year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF110* Flight Planning and Procedures</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF120* Navigation and Meteorology 1</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF131* Aircraft General Knowledge 1</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF150 Occupational Health and Safety</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF160 Propulsion and Aircraft Systems</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF170 Aviation Mathematics and Computing</td>
<td>4 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF180 Aviation Electronics</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF190 Communication Skills</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total hours excluding flying:</strong></td>
<td><strong>21 20</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Second year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF210* Flight Planning and Procedures 2</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF220* Navigation and Meteorology 2</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF231* Aircraft General Knowledge 2</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF241* Theoretical Aerodynamics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF250 Human Factors and Performance</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF260 Advanced Propulsion and Aircraft Systems</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF270 Aircraft Materials and Structures</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF280 Avionics and Electronics</td>
<td>2 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF290 Aviation Business Management</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td><strong>Total hours excluding flying:</strong></td>
<td><strong>20 21</strong></td>
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</table>

### Third year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF310* Instrument Rating Theory (Elective)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF320* Principles of Instruction (Elective)</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF330* Ground School</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF340 Advanced Aerodynamics</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF350 Human Factors and Leadership Training</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF360 Aviation Project</td>
<td>4 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF370 Aircraft Design</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF380 Aircraft Navigation and Control Systems</td>
<td>2 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF390 Aviation Facilities Management</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total hours excluding flying:</strong></td>
<td><strong>19 20</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The subject shown with an asterisk will be provided at Moorabbin Aviation Academy and integrated with the flying component of the course.

**P050 Bachelor of Engineering (Manufacturing)**

The course is an industry based learning (cooperative) program of four-and-a-half years' duration and is designed to provide integrated academic and industrial training.

The course is designed to develop student abilities in the fundamental engineering sciences and technologies. It provides management training in a broad range of disciplines related to the planning and operation of manufacturing enterprises.

The course is accredited by The Institution of Engineers, Australia. Completion of the course gives full exemption from the requirements for admission as a graduate member.

In the second and subsequent years of the course students specialise in either:

- Production engineering and design
- Chemical engineering and design.

The special study subjects are denoted (P) and (C) respectively in the details of the course structure.

Course structure (1990 syllabus)

### First year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE116 Engineering — Solid Mechanics</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE181 Engineering — Electronics and Computing</td>
<td>4 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM121 Engineering — Energy Systems</td>
<td>2 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM122 Engineering — Chemistry and Materials</td>
<td>3 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM123 Engineering — Graphics and CAD</td>
<td>2.5 2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE180 Engineering — Physics</td>
<td>2.5 2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EF190 Professional Studies</td>
<td>2 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM199 Engineering Mathematics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total hours excluding flying:</strong></td>
<td><strong>22 23</strong></td>
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</table>
## Second year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM220</td>
<td>Energy Systems</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM230</td>
<td>Engineering Materials</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM240</td>
<td>Electronics and Measurement Systems</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM241</td>
<td>Applied Mechanics</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM250</td>
<td>Design for Industry</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM270</td>
<td>Manufacturing/CAD</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM280</td>
<td>Introduction to Management</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM297</td>
<td>Professional Computing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SM299</td>
<td>Mathematics</td>
<td>3</td>
<td>3</td>
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### Production Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM271</td>
<td>Manufacturing Technology</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>MM272</td>
<td>Manufacturing Practices</td>
<td>—</td>
<td>4</td>
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</table>

### Chemical Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM210</td>
<td>Industrial Processes</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>MM211</td>
<td>Introduction Chemical Eng'g</td>
<td>—</td>
<td>4</td>
</tr>
</tbody>
</table>

### Hours per week

- **Sem 1**: 22
- **Sem 2**: 22

## Third year

### Core subjects

- MM309: Industry Based Learning (24 weeks)
- MM330: Advanced Materials
- MM380: Productivity Improvement
- MM381: Managerial Economics
- MM396: Computer Science
- SM395: Mathematics

### Production Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM340</td>
<td>Applied Mechanics</td>
<td>3</td>
<td>—</td>
</tr>
<tr>
<td>MM350</td>
<td>Design for Manufacture</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM370</td>
<td>Manufacturing Technology</td>
<td>5</td>
<td>—</td>
</tr>
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</table>

### Chemical Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM312</td>
<td>Unit Operations</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM315</td>
<td>Heat Transfer</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM321</td>
<td>Fluid Mechanics</td>
<td>3</td>
<td>—</td>
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</tbody>
</table>

### Hours per week

- **Sem 1**: 10
- **Sem 2**: 12

## Fourth year

### Core Subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM441</td>
<td>Control Systems</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>MM470</td>
<td>Computer Interfacing</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>MM471</td>
<td>Numerical Engineering</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>MM480</td>
<td>Facilities Planning and Design</td>
<td>3</td>
<td>—</td>
</tr>
<tr>
<td>MM481</td>
<td>Decision Analysis</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>MM482</td>
<td>Manufacturing Operations</td>
<td>2</td>
<td>—</td>
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</table>

### Production Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM450</td>
<td>Design for Manufacture</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM472</td>
<td>Manufacturing Technology</td>
<td>5</td>
<td>—</td>
</tr>
</tbody>
</table>

### Chemical Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM414</td>
<td>Stagewise Processes</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM415</td>
<td>Mass Transfer</td>
<td>4</td>
<td>—</td>
</tr>
</tbody>
</table>

### Hours per week

- **Sem 1**: 3
- **Sem 2**: 4

## Fifth year

### Core subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM500</td>
<td>Project (includes 3 full-time weeks)</td>
<td>6</td>
<td>—</td>
</tr>
<tr>
<td>MM583</td>
<td>Industrial Management</td>
<td>4</td>
<td>—</td>
</tr>
<tr>
<td>MM582</td>
<td>World Class Manufacturing</td>
<td>2</td>
<td>—</td>
</tr>
</tbody>
</table>

### Production Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM550</td>
<td>Design for Manufacture</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM570</td>
<td>Manufacturing Technology</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM581</td>
<td>Manufacturing Systems Modelling</td>
<td>2</td>
<td>—</td>
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</tbody>
</table>

### Chemical Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM510</td>
<td>Combined Heat and Mass Transfer</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM511</td>
<td>Chemical Engineering Design</td>
<td>5</td>
<td>—</td>
</tr>
<tr>
<td>MM556</td>
<td>Reactor Design</td>
<td>2</td>
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</tbody>
</table>

### Hours per week

- **Sem 1**: 12
- **Sem 2**: 12

---

### M050 Bachelor of Engineering (Mechanical)

The degree course program combines a thorough education in the application of engineering science principles with a broad span of studies important to a professional engineer. Streaming in later years of the course is offered through a system of technical elective subjects which allows students to select a particular emphasis for their four-and-a-half year industry based learning (cooperative) program.

### Degree course revision

Students entering the first year of the mechanical engineering course will be enrolled in the common first year, and will follow the Bachelor of Engineering (Mechanical) 1990 syllabus. Courses are arranged to allow flexibility so that any student may transfer from full-time to part-time studies or vice-versa, at particular points of a course, without loss of credit for subjects passed.

### Course structure (1990 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE116</td>
<td>Engineering — Solid mechanics</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EE181</td>
<td>Engineering — Electronics and Computing</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>MM121</td>
<td>Engineering — Energy Systems</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>MM122</td>
<td>Engineering — Chemistry and Materials</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>MM123</td>
<td>Engineering — Graphics and CAD</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>EF180</td>
<td>Engineering — Physics</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>EF190</td>
<td>Professional Studies</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>SM199</td>
<td>Engineering Mathematics</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Hours per week

- **Sem 1**: 22
- **Sem 2**: 23

---

### Additional Notes

- **Second year**: Sem 1: 4, Sem 2: 2
- **Third year**: Sem 1: 24 weeks, Sem 2: 24 weeks
- **Fourth year**: Sem 1: 2, Sem 2: 2
- **Fifth year**: Sem 1: 6, Sem 2: 4
<table>
<thead>
<tr>
<th>Second year</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM222 Energy Systems</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MM230 Engineering Materials</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM240 Electronics and Measurement Systems</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM243 Applied Mechanics</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MM250 Design for Industry</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM260 Ergonomics</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM270 Manufacturing Technology and CAD/CAM</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM280 Introduction to Management</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM297 Professional Computing</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>SM299 Engineering Mathematics</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Plus 36 hours of MM209 Engineering Practices during a break period.

<table>
<thead>
<tr>
<th>Fifth Year</th>
<th>Sem 1</th>
<th></th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM501 Engineering Project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(plus 92 hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM509 Engineering Mathematics</td>
<td>4**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*MM520 Energy and Therm/Fluid Mechanics (2 of 3) (Thermo Fluids; Energy Systems; Energy Modelling.)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*MM540 Mechanics and Machine Systems (2 of 4) (Mechanics of Solids; Vibration and Modal Analysis; Control Engineering; Machines Systems and Simulation.)</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*MM551 Engineering Technology (3 of 5) (Engineering Ergonomics; Engineering Technologies; Equipment Life Cycle; Occupational Risk; Technology Modelling.)</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM580 Management Practices</td>
<td>3</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

**The project is undertaken over an 18 week semester and involves 748 hours of contact. * Part-time students may undertake these subjects in parts a, b, c, etc.

**M082 Graduate Diploma in Air-conditioning**

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on applied thermodynamics and controls. The course consists of six subjects which are usually taken by evening attendance over a period of two years.

Course structure (1988 syllabus)

<table>
<thead>
<tr>
<th>Fourth Year</th>
<th>Sem 1</th>
<th>Sem 2</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM420 Energy Systems</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM440* Mechanics and Machine Systems</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM451 Design for Industry</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM460 Ergonomics</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM483 Engineering Management</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SM499 Engineering Mathematics</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P085 Graduate Diploma in CAD/CAM</th>
<th></th>
<th></th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME621 Air-conditioning</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ME622 Refrigeration</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ME721 Air-conditioning</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME722 Refrigeration</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME731 Instrumentation and System Control</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME781 Project and Energy Management</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The aim of the course is to prepare graduates, mainly from Engineering and the Physical Sciences for future roles in the application of computer aided design and/or computer aided manufacture in the Australian manufacturing industry.

Entrance requirements

Candidates for the graduate diploma should:
- have completed a degree or diploma in engineering or science at a recognised university or college;
- have other qualifications or experience which, in the opinion of the Chairman of the School of Mechanical and Manufacturing Engineering, are of a satisfactory standard, and are suitable preparation for the graduate diploma program.

**Duration**
The course is equivalent to one year of full-time study. However, it is usually taken in part-time mode over two years through evening study or a combination of day and evening.

**Course structure (1990 syllabus)**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM611</td>
<td>Introduction to CAD 2</td>
</tr>
<tr>
<td>MM614</td>
<td>Automation and Machining 2</td>
</tr>
<tr>
<td>MM617</td>
<td>Introduction to CIM 2</td>
</tr>
<tr>
<td>MM620</td>
<td>Computers and Interfacing 2</td>
</tr>
<tr>
<td>MM621</td>
<td>Mathematics 2</td>
</tr>
<tr>
<td>MM618</td>
<td>Introduction to Robotics 2</td>
</tr>
<tr>
<td>MM612</td>
<td>CAD Practice 4</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Schedule A subjects</th>
<th>Hours per week</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP713 Chemical Engineering Design</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>MP714 Stagewise Processes</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>MP711 Mass Transfer</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>ME729 Fluid Mechanics</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>MP715 Heat Transfer</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>MP712 Unit Operations</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>MP751 Design Applications</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>MP724 Chemical Engineering Design 2</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>MM756 Chemical Engineering Design 3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>EA411 Non-Newtonian Technology</td>
<td>4</td>
<td>1 &amp; 2</td>
</tr>
</tbody>
</table>

**Schedule B subjects:**
The subjects offered under schedule B are included to allow students to follow a particular field of interest related to chemical engineering. They have been divided into interest groups and some restrictions apply as shown below. The final choice of subjects will be made with significant consultation between the student and the lecturers involved.

**Group 1 (risk engineering group)**

Students choose a maximum of two subjects.

<table>
<thead>
<tr>
<th>Subjects offered</th>
<th>Hours per week</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME762 Risk Engineering</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>ME664 Risk Engineering</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ME765 Risk Engineering (H&amp;S)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>ME764 Risk Control Practices and Technology</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

**Group 2 (environmental studies group)**

Students choose a maximum of two subjects.

<table>
<thead>
<tr>
<th>Subjects offered</th>
<th>Hours per week</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP717 Industrial Processes and Pollution Control</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>MP719 Occupational Health and Safety</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>ME742 Health and Hygiene</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>EA491 Biochemical Engineering</td>
<td>4</td>
<td>1 &amp; 2</td>
</tr>
</tbody>
</table>

**Group 3 (management and economic evaluation group)**

<table>
<thead>
<tr>
<th>Subjects offered</th>
<th>Hours per week</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM755 Equipment Life Cycle</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Group 4 (instrumentation and control)**

<table>
<thead>
<tr>
<th>Subjects offered</th>
<th>Hours per week</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM740 Instrumentation and Measurement Systems</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM741 Control Engineering</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

**P083 Graduate Diploma in Chemical Engineering**
The purpose of the course is to provide students with a basic core of chemical engineering knowledge. It is designed to meet the needs of graduates who are not chemical engineers but who are working in the chemical industry or some related field.

Applicants are required to possess either a degree or diploma in applied science or engineering. However, consideration will be given to applicants who do not possess the formal admission requirements, but who, by virtue of an extensive period of industrial or other experience, can demonstrate they have the capacity to cope with the study load involved.

The proposed course is planned to be completed in two years (four semesters) of part-time study although timetable restrictions may mean, on occasions, that five semesters will be required. It is also possible that the course could be completed in one year of full-time study. Some day time classes are involved and these are timetabled as blocks to cause as little inconvenience as possible. Other subjects may be available as evening classes.

**Group subjects involved in this course are classified as either schedule A or schedule B subjects. Schedule A subjects provide the basic chemical engineering information whilst schedule B subjects offer topics more peripheral to the chemical engineering aspects of the course. To obtain the qualification, a minimum of 448 hours (32 semester hours) is required. Choice of subjects is restricted so that a minimum of 280 hours (20 semester hours) of schedule A subjects is included. The remaining hours can be taken from either schedule A or schedule B.**

**P087 Graduate Diploma in Computer Integrated Manufacture (CIM)**
The aim of the course is to prepare graduates from engineering and the physical sciences for future roles in the development and application of computer integrated manufacturing in Australian manufacturing industry. Such graduates must have proven academic ability.

Computer integrated manufacturing is an important and effective means of achieving productivity improvements which must be seriously considered by manufacturing companies wishing to become and remain competitive, and which should be encouraged in the national interest so that application of appropriate technology can improve our ability to compete on international markets and against cheaper, high quality imports in the domestic market.
Entrace requirements

(a) Normal entry
Completion of an approved bachelors degree in Engineering.

(b) Other applicants
Applicants are considered on their individual merits but must have qualifications and experience which, in the opinion of the Engineering Faculty Board, are a suitable preparation for study in the graduate diploma program.

Duration of course
The Graduate Diploma in Computer Integrated Manufacture (CIM) is a one year full-time program.

Course structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM617 Introduction to CIM</td>
<td>2 Sem 1 2 Sem 2</td>
</tr>
<tr>
<td>MM620 Computers and Interfacing</td>
<td>2</td>
</tr>
<tr>
<td>MM632 Computer Aided Design</td>
<td>2</td>
</tr>
<tr>
<td>MM614 Automation and Machining</td>
<td>2</td>
</tr>
<tr>
<td>MM625 Machine Systems</td>
<td>2</td>
</tr>
<tr>
<td>MM626 Advanced Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>MM627 Manuf. Management Systems</td>
<td>2</td>
</tr>
<tr>
<td>MM628 Control Systems and Devices</td>
<td>2</td>
</tr>
<tr>
<td>Total hours per week</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM629 Computers and Interfacing</td>
<td>2</td>
</tr>
<tr>
<td>MM615 Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM630 Mathematics and Computing</td>
<td>2</td>
</tr>
<tr>
<td>MM633 Advanced CAD</td>
<td>4</td>
</tr>
<tr>
<td>MM622 Advanced Computer Techniques</td>
<td>2</td>
</tr>
<tr>
<td>MM631 Machine Systems</td>
<td>2</td>
</tr>
<tr>
<td>MM623 Computer Based Mgt. Systems</td>
<td>2</td>
</tr>
<tr>
<td>Total hours per week</td>
<td>16</td>
</tr>
</tbody>
</table>

M081 Graduate Diploma in Maintenance Engineering

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on maintenance engineering, maintenance management and its interaction with industry in general.

Course content comprises common core material with the Graduate Diploma in Risk Management, emphasising maintenance engineering's place as a major sub-set of business risk management activity, complemented by specialist subjects relating to the practice of maintenance engineering. The course will usually spread over two years.

Course structure (1989 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME660 Risk Management</td>
<td>2 Sem 1 1 Sem 2</td>
</tr>
<tr>
<td>ME661 Risk Engineering 1</td>
<td>2</td>
</tr>
<tr>
<td>ME627 Risk Psychology</td>
<td>1</td>
</tr>
<tr>
<td>ME629 Risk Social Science</td>
<td>1</td>
</tr>
<tr>
<td>ME651 Risk Philosophy</td>
<td>1</td>
</tr>
<tr>
<td>ME652 Occurrence Analysis</td>
<td>1</td>
</tr>
<tr>
<td>SM741 Statistics and Reliability</td>
<td>2</td>
</tr>
<tr>
<td>BS625 Health and Safety Law</td>
<td>1</td>
</tr>
<tr>
<td>ME675 Maintenance Management</td>
<td>2</td>
</tr>
<tr>
<td>Total hours</td>
<td>8 6</td>
</tr>
</tbody>
</table>

Second year

| ME776 Maintenance Engineering | 3 |
| ME774 Maintenance Practices and Technology | 2 2 |
| ME777 Maintenance Management | 2 2 |
| ME780 Major Project | 3 |
| Total | 7 7 |

People who have experience in the maintenance field but not the prerequisite qualifications may be enrolled if they have an adequate background and are able to cope with the course. Assessment is continuous throughout the course.

P081 Graduate Diploma in Manufacturing Technology

This course is designed to increase the effectiveness of engineers, scientists and technologists who, by virtue of their position in industry or the public service, find themselves ill-equipped to function in a modern manufacturing operation. This may be due to the nature of their original training (qualification), or simply to the rapid changes in technology and the industrial environment.

Entrance requirements
All applicants should have completed a relevant degree or diploma in engineering, science or applied science.

Under special circumstances, a limited number of applicants not meeting the above, may be admitted after interviews on the basis of considerable relevant experience and level of responsibility in manufacturing.

Duration
The course is equivalent to one year full-time study and is normally undertaken by part-time study over two and a half years. (Students must be able to attend at least one half day session during normal day time hours.)

Course structure (1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM607 Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM608 Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM605 Design for Manufacture</td>
<td>4</td>
</tr>
<tr>
<td>MM614 Automation and Machining</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM606 Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM604 Design for Manufacture</td>
<td>4</td>
</tr>
<tr>
<td>MM615 Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM616 Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM617 CAD Practices</td>
<td>3</td>
</tr>
<tr>
<td>Total hours</td>
<td>5 4</td>
</tr>
</tbody>
</table>

A minimum of three semester hours of electives must be taken from the following list:

| MM622 Advanced Computer Techniques | 2 |
| MM613 Micro CAD | 2 |
| MM617 Introduction to CIM | 2 |
| MM620 Computers and Interfacing | 2 |
| MM612 CAD Practices | 4 |

M083 Graduate Diploma in Risk Management

This course provides further studies for graduates in all branches of engineering, applied science and business, to gain more specialised knowledge in risk management. This has application in many areas of technical and business decision-making where proper consideration of risks is essential to minimise human discomfort and injury; as well as potential physical and financial losses.
Subject material is arranged to enable studies to be undertaken in one of three specialised streams, in addition to a common core of studies. The streams are:

- health and safety risks;
- plant and property risks;
- maintenance (production risks).

This arrangement allows groups with specific interests within the broad risk management field to specialise.

Core material comprises subjects directed at developing an understanding of the broad risk management discipline from the management, insurance, statistical, engineering, psychological, social and legal aspects.

Streamed material includes expansion of core material in relevant directions as well as more specialised subjects. Full subject details are available from the School of Mechanical and Manufacturing Engineering.

The course will usually spread over two years.

### Course structure (1992 syllabus)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core subjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM710 Introduction to Risk</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM711 Quantitative Risk</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM712 Risk Law</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM713 Risk Management Principles</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM714 Risk Analysis</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM715 Risk Engineering</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM716 Risk Evaluation Principles</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM718 Financial Risk Management</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Second year (complete stream of choice)</strong></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Health and Safety stream</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM810 Risk Engineering Science</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM811 Risk Management Practices</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM814 Risk Technology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM817 Risk Research</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM818 Risk Engineering Science</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM821 Risk Management Practices</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM824 Risk Technology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM827 Risk Project</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Plant and Property stream</strong></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>MM810 Risk Engineering Science</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM812 Risk Management Practices</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM815 Risk Technology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM817 Risk Research</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM819 Risk Engineering Science</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM822 Risk Management Practices</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM825 Risk Technology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM827 Risk Project</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance (production risks) stream</strong></td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>MM810 Risk Engineering Science</td>
<td>2</td>
<td></td>
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<tr>
<td>MM813 Risk Management Practices</td>
<td>2</td>
<td></td>
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<tr>
<td>MM815 Risk Technology</td>
<td>2</td>
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<tr>
<td>MM817 Risk Research</td>
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<tr>
<td>MM820 Risk Engineering Science</td>
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<td></td>
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<tr>
<td>MM823 Risk Management Practices</td>
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<tr>
<td>MM826 Risk Technology</td>
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<tr>
<td>MM827 Risk Project</td>
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</tr>
</tbody>
</table>

### Entrance requirements

(a) Normal entry
A four year degree in engineering or equivalent qualification.

(b) Other applicants
Other applicants with a professional qualification, depending upon their postgraduate experience, will be required to undertake suitable preliminary studies approved by the Engineering Faculty Board.

Students who have completed the coursework for the Graduate Diploma in Computer Integrated Manufacture at an average grade of 'C' may be admitted to the program with advanced standing.

A person who has been awarded a Graduate Diploma in Computer Integrated Manufacture may not be awarded the Master of Technology (CIM) i.e. A person who has been awarded the graduate diploma must relinquish the graduate diploma before being eligible for the award of the Master of Technology.

### Duration of course
The course is a two year equivalent full time program incorporating the academic program for the Graduate Diploma in Computer Integrated Manufacture. The minimum period of enrolment for the Master of Engineering program is three semesters. The full time program normally extends over four semesters. Further options include a three and four year part time format.

Students are not normally permitted to extend their course enrolment beyond five years, except when leave of absence has been granted.
The aim of the course is to prepare graduates from effective means of achieving productivity improvements.

Computer integrated manufacturing is an important and engineering and the physical sciences for future roles in the development and application of computer integrated manufacturing in Australian manufacturing industry. Such graduates must have proven academic ability.

Computer integrated manufacturing is an important and effective means of achieving productivity improvements which must be seriously considered by manufacturing companies wishing to become and remain competitive, and which should be encouraged in the national interest so that application of appropriate technology can improve our ability to compete on international markets and against cheaper, high quality imports in the domestic market.

Entrance requirements

(a) Normal entry
A four year degree at a good second class honours level in engineering or equivalent qualification.

(b) Other applicants
Other applicants with a professional qualification, depending upon their postgraduate experience, will be required to undertake suitable preliminary studies approved by the Engineering Faculty Board.

Students who have completed the coursework for the Graduate Diploma in Computer Integrated Manufacture at an average grade of 'C' may be admitted to the program with advanced standing.

A person who has been awarded a Graduate Diploma in Computer Integrated Manufacture may not be awarded the Master of Engineering (CIM) i.e. A person who has been awarded the Graduate Diploma must relinquish the Graduate Diploma before being eligible for the award of the Master of Engineering (CIM).

Duration of course
The course is a two year equivalent full-time program incorporating the academic program for the Graduate Diploma in Computer Integrated Manufacture. The minimum period of enrolment for the Master of Engineering program is three semesters. The full time program normally extends over four semesters. Further options include a three and four year part time format.

Students are not normally permitted to extend their course enrolment beyond five years, except when leave of absence has been granted.

Course structure

Year 1

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM617 Introduction to CIM</td>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>MM620 Computers and Interfacing</td>
<td>2</td>
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<tr>
<td>MM632 Computer Aided Design</td>
<td>2</td>
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<tr>
<td>MM614 Automation and Machining</td>
<td>2</td>
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<tr>
<td>MM625 Machine Systems</td>
<td>2</td>
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<tr>
<td>MM626 Advanced Mathematics</td>
<td>2</td>
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<tr>
<td>MM627 Manuf. Management Systems</td>
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<tr>
<td>MM628 Control Systems and Devices</td>
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<tr>
<td>MM689 Minor Thesis</td>
<td>16</td>
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<tr>
<td>P091 Master of Engineering (Computer</td>
<td>16</td>
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<tr>
<td>Integrated Manufacture) (by coursework and thesis)</td>
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<tr>
<td>Total hours per week</td>
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</table>

Year 2

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Per week</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM901 Database Technology</td>
<td>3</td>
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<tr>
<td>MM902 Numerical Engineering</td>
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<tr>
<td>MM906 Project — Part A</td>
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<tr>
<td>MM903 Numerical Engineering</td>
<td>3</td>
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<tr>
<td>MM904 Systems Integration</td>
<td>3</td>
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<tr>
<td>MM907 Project — Part B</td>
<td>12</td>
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</tr>
</tbody>
</table>

Total hours per week

Y098/Y099 Master of Engineering

Y008/Y009 Doctor of Philosophy

Graduates who hold a Bachelors degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering or Doctor of Philosophy.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in the approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master or PhD appear in the 'Procedures and Regulations' chapter of this Handbook and application forms are available from the Office of Research and Graduate Studies.
Subject details

This section contains a brief description of the various subjects in all engineering degree courses, the diploma course in building surveying, and all graduate diploma courses.

It should be noted that details of subjects taught by engineering schools to students in other courses (e.g., environmental health which is offered by the Applied Science Faculty) are given in the chapter of the faculty offering the course.

Subjects in this section are grouped in numerical order within the following codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Department, School or Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE</td>
<td>Civil Engineering and Building</td>
</tr>
<tr>
<td>EA</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>EE</td>
<td>Electrical Engineering</td>
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<tr>
<td>EF</td>
<td>Faculty of Engineering</td>
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<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
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<tr>
<td>MF</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>MM</td>
<td>Mechanical and Manufacturing Engineering</td>
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<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>SM</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Physics</td>
</tr>
</tbody>
</table>

Subject length

UNLESS OTHERWISE STATED ALL SUBJECTS ARE SEMESTER SUBJECTS.

Students should note the following definitions with regard to reading material prescribed for engineering subjects:

Preliminary reading

Introductory material which students are expected to read before classes commence.

Textbooks

Materials essential to the subject.

References

Materials that will be referred to throughout the duration of the subject.

Unless otherwise specified, students are advised not to purchase textbooks or references until classes commence.

CE114 Applied Mechanics

No. of hours per week: three hours for two semesters

Prerequisites: nil

Instruction: lectures, tutorials, laboratory work

Assessment: examination 80%, assessed work 20%

Subject aims and description

A first-year subject in the degree course in building surveying designed to develop in students an understanding of the basic principles of mechanics and their application to the behaviour of loaded members and simple systems. Basic concepts of structural mechanics are covered together with stress and strain, behaviour of simple structural members and basic deflection.

References


CE116 Engineering Science — Solid Mechanics

No. of hours per week: three hours for two semesters

Assessment: examination 80%, assessed work 20%

A common first-year subject in the Bachelor of Engineering.

Subject aims

To introduce students to the fundamentals of engineering mechanics and strength of materials.

Subject description

Basic concepts: forces and force systems, loads, equations of equilibrium, reactions for statically determinate beam, frame and truss systems. Analysis of pin-jointed trusses. Shear force and bending moment concepts and diagrams.

Stress and strain: types of stress, general stress-strain relationships, linear elastic parameters.

Performance of loaded members and simple connections: behaviour of compound members, short and long columns, circular shafts. Stress and deflections in statically determinate beams. Deflection by integration to the elastic line.

Elementary beam design concepts. Introduction to hydrostatics: hydrostatic pressure, pressure measurement, hydrostatic thrust, pressure vessels.

Introduction to structural behaviour: structural forms and their behaviour under load, stability, structural failures.

Textbooks


CE173 Construction

No. of hours per week: six hours in first semester, five hours in second semester

Prerequisites: nil

Instruction: lectures, tutorials, field inspections, drafting classes

Assessment: examination 80%, diary, reports, research project, folio of work 20%

Subject aims and description

A first year subject in the Degree of Building Surveying, intended to develop in students an understanding of the general principles of construction of single and double-storey residential buildings, and to teach the rudimentary aspects of free hand sketching and drafting.

Textbook


References

Australian Standard AS100 Technical Drawings
Glossary of Building and Planning Terminology
Notes on Science of Building V.C.P.S.

CE192A Statutory Control Plan Checking 1 and

CE192B Introduction to Construction Law.

Subject aims

This subject has two components:

CE192A Statutory Control/Plan Checking 1

No. of hours per week: three hours in first semester, five hours in second semester

Prerequisites: nil

Instruction: lectures, tutorials, assignments

Assessment: examination 80%, assignments 20%

Subject aims and description

A first year subject in the Degree of Building Surveying, intended to provide students with an understanding of the role and duties of a building surveyor and an introduction to acts and regulations.

This subject covers topics such as administration and law, local government. The role of building surveyor. Statutory functions related to Acts and regulations. The building surveyor as manager.
Liaison with other council departments, public authorities and private enterprise.

Basic principles of the regulations. General knowledge of related Acts, regulations, codes and standards.

Plan checking of domestic type applications for building permit.

Textbooks
Building Code of Australia
Building Control Ad
Victoria Building Regulations

CE192B Introduction to Construction Law
No. of hours per week: two hours
Prerequisites: nil
Instruction: lectures, tutorials
Assessment: examination 80%, assessed work 20%

Subject aims and description
A first year subject in the Degree of Building Surveying, intended to enable students to understand the origins of law and to provide building surveyors with a suitable legal background for the proper discharge of their duties.


Textbooks

References
Legal Resources Book. Fitzroy Legal Services

CE196 Communications
No. of hours per week: two hours for two semesters
Prerequisites: nil
Instruction: lectures, tutorials
Assessment: assessed work 100%

Subject aims and description
A first year subject of the Degree in Building Surveying intended to introduce the students to techniques for developing basic skills in written and oral communication as well as an understanding of social and urban issues relevant to building surveyors.

References
Building Surveyor. Editor D. Wadsworth
Other references to be advised during lectures

CE204 Computer Application
No. of hours per week: two hours
Prerequisites: nil
Instruction: lectures, tutorials, laboratory work
Assessment: assessed work 100%

Subject aims and description
A second year subject of the Degree in Building Surveying designed to enable students to understand the operation and use of computers in industry. The subject covers: introduction to microcomputers, operating systems. Overview of windows applications related to word processing, spreadsheets and CAD.

References
Person, R. Using Excel 4 for Windows. QUE, 1992

CE211 Structural Mechanics
No. of hours per week: two hours of lectures and one hour of tutorial, both for two semesters
Assessment: examinations (2) 75%, assessed tutorials (6) 25%

Subject aims
To develop an understanding of structural behaviour in statically determinate and indeterminate systems and to introduce computer methods of structural analysis.

Particular use will be made of a number of standard structural analysis programs.

Subject description

Statically determinate structures: modelling and equilibrium of forces in beams, frames, arches and cables. Application to gravity structures such as retaining walls.

Introduction to virtual work: deflection due to axial force and bending, flexibility method of analysis for continuous beams and indeterminate trusses.

Statically indeterminate structures: development of the slope deflection equations and the beam element action-displacement relationship, introduction to the matrix stiffness method of analysis for trusses and continuous beams, introduction to plastic analysis of continuous beams.

Computer applications: modelling and analysis of a range of structures using frame analysis software, with verification by approximate methods.

Stress analysis: biaxial loading, torsion of circular and thin-walled closed sections, shear centre, skew bending, analysis of composite sections.

Textbook

CE231 Hydraulics
No. of hours per week: three hours for two semesters
Assessment: examination 70%, tutorials/assignments/lab work 30%

Subject aims
To enable students to apply the concepts of continuity, conservation of energy and momentum, and energy losses to the flow of fluid, and hence to analyse a wide range of simple reservoir, pipe and channel systems.

Subject description
Statics: pressure, thrust, bouyancy, stability of floating vessels.
Fluid concepts: continuity, the one-dimensional energy equation, orifices, weirs, sluices, differential head meters. Momentum, forces on fittings, jet impact.
Model analysis: Reynolds and Froude models.
Pipe flow: Darcy-Weisbach and Colebrook-White formulas, development of the Moody diagram, empirical formulas, shock losses, analysis of pipe-reservoir systems.
Channel flow: Manning formula, part-full pipes, specific energy, Froude number, hydraulic jump.

Pumps: classification and principles of operation, pump and system characteristics.

Practical work: a series of short experiments designed to:
(a) demonstrate principles of fluid flow
(b) introduce simple flow measurement methods and equipment
(c) develop skills in handling flowing water
(d) develop organisating and reporting skills.

CE241 Surveying
No. of hours per week: two hours of theory for two semesters and three hours of practical work for twenty weeks
Assessment: examinations (2) 80%, practical surveying 20%

Subject aims
To develop a basic knowledge of surveying theory and practice in the use of levels, theodolites, electronic distance measurement, engineering survey drafting and computations with both calculators and microcomputer software.

Subject description
Principles and types of surveys, error classification and sources, detail surveys and plan layout. Distance measurement. Principles and use of electronic distance measurement.

Levelling: construction, use and adjustment of level types, booking and methods of reduction of levels. Contour properties, plotting and use of contour plans.

Theodolites: construction, use of theodolites, traversing, angle reading methods, setting out of works, theodolite tacheometry.

Computations: introduction to surveying microcomputer software, traverse reductions, areas, volumes and setting out of engineering works, road intersections.

Setting out of circular curves, introduction to cadastral surveying.

CE243 Land Surveying
No. of hours per week: four hours
Prerequisites: nil
Instruction: lectures, tutorials, fieldwork
Assessment: examination 80%, assessed work 20%

Subject aims and description
A second-year subject of the degree in Building Surveying, designed to enable students to understand basic land surveying techniques and legal aspects of surveys as related to building surveying practice.

Principles and types of surveys and plans. Distance measurement, levelling, angle measurement, setting out. Cadastral surveying and laws related to surveying, check/relocation surveys, old law, transfer of Land Act 1958 and title office procedures.

References

CE255 Structural Design
No. of hours per week: three hours for two semesters
Assessment: examination/assignment/laboratory

Subject aims
To introduce concepts and methods of structural design. To apply these principles to the design of structural elements in steel and concrete. To provide practice in the application of these principles.

Subject description
Design theories: the design process, load versus strength, limit states of stability, strength and serviceability, permissible stress design, deemed to comply provisions. Loads on structures: types of load, loading codes and building regulations, load paths in structures, conversion to loads on elements, modelling of structural forms.

Design of steel members subject to axial tension, compression, bending and combined bending and compression.

Design of simple steel welded and bolted connections — axially loaded single and double angles, beam and cantilever end connections, structural bases. Design of simple steel elements.

Analysis and design of plain and reinforced concrete elements, limited to statically determinate structures — including requirements of durability and fire resistance.

Concrete technology: characteristics of concrete and components, design of concrete mixes, additives, factors affecting performance.

Steel technology: deformation and fracture, heat treatment in relation to welding practice, welding processes, corrosion.

References
AS3600-1988 Concrete Structures
AS4100-1990 SAA Steel Structures Code

CE245 Structural Design
No. of hours per week: four hours
Prerequisites: CE114 Applied Mechanics, SM193 Mathematics
Instruction: lectures, tutorials
Assessment: examination 70%, assessed work 30%

Subject aims and description
A second year subject of the Degree in Building Surveying, intended to familiarise students with the processes of design and checking of structural documentation, with particular emphasis on the main provisions and underlying principles of codes of practice for steel structures, timber structures and for glazing in buildings.

References
AS1288 Glazing in Buildings
AS1684 Timber Framing Code
AS1720 Timber Engineering Code
AS3600-1988 Concrete Structures
AS4100-1990 SAA Steel Structures Code

CE261 Road Engineering
No. of hours per week: three hours
Assessment: examination 75%, assignments 25%

Subject aims
To outline the engineering science and civil engineering practice of roads and streets including the construction techniques normally employed.

Subject description
Road design: cross section types and function, diversion of typical elements. Introduction to horizontal and vertical curves. Design and coordination of horizontal and vertical alignment using GEOCOMP software. Drainage of roads. Balancing earthworks volumes by adjusting vertical geometry.
Road materials and tests: aggregates and bituminous materials, theory of compaction, theory of stabilisation.
Traffic engineering: basic traffic studies, analysis of speed and travel time and delay studies, traffic control devices.
Construction of roads: including types and use of machines, clearing, ripping, earthmoving, compaction, trimming, bituminous surfacing, stabilisation, erosion control. Field control of compaction and field tests of density. Production and efficiency in earthmoving.
Practical work: Appropriate laboratory tests to support the theoretical content. Computer classes in road design.

CE276 Construction
No. of hours per week: five hours in first semester, three hours in second semester
Prerequisite: CE173 Construction
Instruction: lectures, tutorials, drafting classes, field work
Assessment: examination 70%, diary, reports, research projects, folio of work 30%

Subject aims and description
A second-year subject of the Degree in Building Surveying, designed to give students an understanding of the general principles and details of buildings with load-bearing walls up to three-storeys and single-storey, wide span structures with framed or load-bearing walls, and to expose the students to architectural and engineering drafting related to buildings.

References
Brickwork Code
Building Code of Australia
Concrete Code
Ferguson, B.J. Reinforcement Detailing Handbook. Concrete Institute of Australia, 1988
Trade Catalogues

CE277 Temporary Structures
No. of hours per week: three hours for two semesters
Prerequisite: CE173 Construction
Instruction: lectures, tutorials, practical work, field work
Assessment: external examinations in Scaffolding Inspections A and B. Satisfactory completion of practical work and assignments

Subject aims and description
A second-year subject of the Degree in Building Surveying, designed to give students an understanding of the general principles, structural details of scaffolding, falsework and formwork.
The subject is made up of three major sections:
Part A Scaffolding A
Part B Scaffolding B
Part C Formwork and false work
This section covers the temporary structures used in the construction of buildings.

Textbooks
Scaffolding Act 1971
Scaffolding Regulations 1974

References
Formwork Code
Scaffolding Code

CE281 Geomechanics
No. of hours per week: three hours for two semesters
Assessment: field and practical work, mapping 30%, examinations 70%

Subject aims and description
A subject in the second year of the Degree in Civil Engineering which aims to develop an understanding of the fundamental principles of geology and soil mechanics, and apply these to simple engineering problems.
Geology: Significance of geology in civil engineering.
Principles of mineralogy and petrology. Structural geology including deformed rocks. Geomorphology including ground water and weathering, Victorian stratigraphy. Engineering geology including site investigation. Practical and field work including mineral and rock identification, geological mapping, excursions.
Soil Mechanics; Soil types and physical properties. Classification and soil description. Geostatic stresses and the effective stress law. Soil hydraulics including permeability, flow nets, and anisotropic flow. Shear strength of coarse and fine grained soils including total and effective stress. Shear strength testing. Earth pressure theory for rigid and flexible retaining walls. Bearing capacity of shallow foundations. Practical work including index tests, soil permeability and construction of flow nets, undrained triaxial test and direct shear test. Field work including a simple site investigation.

Reference

CE283 Geomechanics
No. of hours per week: three hours
Instruction: lectures, tutorials, laboratory work
Assessment: examination 70%, reports 30%

Subject aims and description
A second-year subject of the Degree in Building Surveying, designed to provide a building surveyor with the necessary knowledge of geomechanics to enable him to perform his duties of inspection and approval of foundations and other earth works properly.
Types of soil and rock, stresses in soils, strength of soils, field and laboratry tests, soil water, foundations: introduction to bearing capacity, settlement and footing design. Approval of foundation. Inspections.

References
Das, B.M. Principles of Geotechnical Engineering. 2nd ed. PWS-Kent, 1990
Residential Footings Code
Site Investigations Code

CE294 Statutory Control
This subject consists of:
CE294A Statutory Control/Plan Checking 2 and CE294B Town Planning.

CE294A Statutory Control/Plan Checking 2
No. of hours per week: three hours for two semesters
Prerequisite: CE192 Statutory Control
Instruction: lectures, tutorials
Assessment: examination 70%, assessed work 30%

Subject aims and description
A second-year subject of the Degree in Building Surveying, intended to give students an understanding of the major
requirements and underlying principles in the regulations and acts pertaining to building control. This subject covers:
administration aspects, functions of building surveyors, acts and regulations together with plan checking related to industrial and commercial buildings.

Textbooks
Building Code of Australia
Building Control Act 1981
Victoria Building Regulations

References
Relevant Australian standards

CE2948  Town Planning
No. of hours per week: two hours
Prerequisite: CE192 Statutory Control
Instruction: lectures, tutorials
Assessment: examination 70%, assessed work, assignments 30%

Subject aims and description
A second-year subject of the Degree in Building Surveying, which introduces students to problems in planned development in urban and rural environments.
The planning process: the purpose of planning, historical development of urban settlements, sociological effects of the built environment. Administration of planning schemes.
Residential planning standards. Basic surveys of planning, the use of remote sensing in urban planning. Introduction to data bases for planning purposes.

References

CE295  Engineering Management
No. of hours per week: three hours
Assessment: written work 40%, oral presentation 40%, activity participation 20%

Subject aims
To introduce students to autonomous learning, problem solving, communication and basic management skills. To facilitate students’ practice of these skills.

Subject description
Management practice
Students will be encouraged, through active participation, to acquire and develop the following basic management skills:
• problem analysis and problem solving,
• (independent) learning,
• time management,
• material comprehension and critical assessment of information:
  — asking questions,
  — reading drawings,
  — reading technical information,
  — note taking,
  — listening,
  — library information sources,
• teamwork and individual contributions,
• written and oral communications,
• preparation for and review of lecture material,
• interviews.
Management theory
• introduction to industrial organisations and organisation management systems,
• engineering in conjunction with business management, people management and personal relations.

CE297  Management
No. of hours per week: two hours for two semesters
Prerequisite: CE196 Communications
Instruction: lectures, tutorials and field work
Assessment: examination 70%. assessed work 30%

Subject aims and description
A second-year subject of the Degree in Building Surveying, which introduces students to accounting, financial reports and project evaluation. This subject includes: introduction to accounting, analysis and interpretation of financial reports, cost accounting, project evaluation — financial analysis techniques applicable to projects.

References
Swinburne Institute of Technology and Royal Melbourne Institute of Technology. Introductory Accounting and Finance for Management. 1985

CE301  Engineering Computing
No. of hours per week: two hours
Assessment: examination 30%, assignment 70%

Subject aims
To develop an understanding of the operation and use of microcomputer systems in an engineering environment.
To introduce students to structured BASIC and Fortran languages.

Subject description
Introduction to microcomputers: basic architecture, local area networks, terminology.
Microcomputer hardware: CPU evolution, storage mediums, graphics cards, peripheral devices such as plotters and printers.
Operating systems: role and function, review of MS-DOS, graphical user interfaces.
Programming: computer programming techniques, structured programming and program documentation. Programming BASIC, including input/output routines, control procedures, sub-program procedures, mathematical and string functions, file handling. Overview of other programming languages, introduction to Fortran.

References
Jansa, K.A. MS-DOS QBASIC. Microsoft Press, 1991

CE311  Structural Mechanics
No. of hours per week: three hours
Assessment: examination/laboratory

Subject aims
To develop an understanding of structure behaviour in skeletal frame systems with an emphasis on computer methods, balanced with approximate methods of analysis.

Subject description
Statically determinate structures: deflections, by virtual work methods, due to axial force, bending, shear and torsion. Statically indeterminate structures: flexibility method of analysis, applied to structures of one and two degrees of statical indeterminacy, moment distribution method applied to continuous beams and no-sway frames, effects of temperature, support settlement, misfit of members, approximate analysis, matrix analysis by the general stiffness method.
Plastic analysis of structures: applications to beams and frames.

Elastic stability: fundamentals; stability of members (columns, lateral buckling of beams, beam-columns).

Introduction to structural dynamics: one degree of freedom systems.

**Textbook**

**References**

——— CE324 Urban Planning

**No. of hours per week:** two hours

**Assessment:** examination/assignments

**Subject aims**
To introduce students to urban planning and the role of the civil engineer in urban planning.

**Subject description**
Land use planning: the purpose of planning, history of settlements, urban and regional structure, land use planning models, housing, planning schemes, residential planning standards, physical and social surveys, planning legislation, landscape planning, shopping trends, inner city development. Transport planning: transport planning models, local area traffic planning schemes, bicycle planning, parking, public transport, freight transport, pedestrian traffic management.

——— CE331 Water Engineering

**No. of hours per week:** three hours

**Subject aims**
To apply the hydraulic principles presented in CE331 to the development of theory governing pipeline, channel and pump design and performance.

To introduce students to the science of hydrology with particular emphasis on the rainfall-runoff process.

**Subject description**
Steady closed conduit flow: pipe friction formulae, hydraulic and energy grade-lines, equivalent pipes to substitute pipes in series and parallel, branching pipe systems, pipe networks, solution by Hardy-Cross method, surges in pipelines, pump and pipeline systems. Hydrology: meteorological phenomena producing precipitation, measurement and analysis of precipitation, streamflow and stream gauging, the run-off process in the hydrologic cycle, rainfall intensity-frequency — duration curves, determination of flood discharge. Hydraulics of open channel flow: steady non-uniform flow phenomena, concepts of specific energy and critical depth of non-rectangular cross-sections, gradually varied flow, control sections and their use, direct step method of profile computation, numerical integrating method, classification of surface profiles, transitions, venturi flumes.

——— CE343 Surveying (Elective)

**No. of hours per week:** three hours

**Assessment:** assignment/laboratory

**Subject aims**
To extend basic survey techniques for municipal engineering survey projects related to the use of total stations with data collectors for the production of plans with microcomputers.

**Subject description**
Trigonometrical and horizontal control surveys; introduction to map projections and the Australian Map Grid. Tacheometric surveys using EDM and total station techniques using micro computer software for the production of enhanced computer generated contoured plans of engineering surveys.

**References**
GEOCOMP software manual by Survey Computing Consultants (publishers and authors), 1986

——— CE351 Structural Design

**No. of hours per week:** four hours

**Assessment:** examination 60-70%, assessment by consultation 30-40%

**Subject aims**
To extend students' knowledge of the principles of structural design in steel and reinforced concrete. To introduce principles of timber design and prestressed concrete. Provide practice in the application of these principles.

**Subject description**
Design theory
Design principles appropriate to steel, timber, reinforced concrete and prestressed concrete, including tiered design methods and live load reduction and intensification. Introduction to wind load code (AS 1170.2-1989).

Steel: design of beams, requiring detailed design of stiffeners and lateral restraints. Steel: design of columns requiring consideration of no-sway and sway cases and baseplate details.

Timber: design of beams and columns, including their nailed and/or bolted end-connections.

Reinforced concrete: design of parts of a total structure including beams, two-way slabs, one-way and two-way footings, slender columns and walls. Reinforcement detailing.

Prestressed concrete: introduction to prestressed concrete, limited to statically determinate elements.

**Design practice**
Exercises in loads on structures and structural steel and concrete design.

Computer software may be used to assist the design process where appropriate.

——— CE355 Structural Engineering (Elective)

**No. of hours per week:** three hours

**Assessment:** examination 50%. laboratory and assignments 50%

**Subject aims**
To develop a high level of competence in the analysis and design of structures.

**Subject description**

Design of steel structures: fabrication, erection, corrosion and fire protection, resistance to lateral loads, bracing systems, action under non gravity loads.
Design of timber structures: glulam and LVL members, joint displacements, plate connectors and multi-nail connections. Design of concrete structures: modelling and analysis of three dimensional forms such as stairs, combined footings and flat slab systems, reinforcement detailing.

**Subject aims**
To introduce students to some fundamental concepts in business management and construction management.

**Subject description**
Management fundamentals (28 hours)
General introduction to classical management theory.
Organisation: the nature of management, organisation structure, management structure, management functions, key function areas.
Finance: introduction to business finance, sources of funds, financial accounting, double entry bookkeeping through to trial balance, management accounting, costing capital investment, working capital.
Human aspects: introduction to human aspects and industrial relations, basic psychology, working groups, informal organisation, status, motivation, human resources management, industrial legislation affecting arbitration, employment, working conditions, introducing change
Construction management (14 hours)
Site organisation: organisation, procedures, duties and responsibilities of the client's and contractor's representatives.
Site safety: regulations and ads, safety precautions, codes of practice.
Operations analysis: time and motion studies, time lapse techniques, sampling of operations, queuing theory in determining economic haul-server systems.

**Subject aims**
To further develop students' understanding of structural mechanics. To extend students' knowledge of the principles of structural design in prestressed concrete and steel design. To introduce principles of masonry design. To provide practice in the application of these principles.

**Subject description**
Theory
Stress analysis: stress-strain relations and the general equations of elasticity, plane strain and plane strain problems, yield criteria (Tresca, Von Mises), torsion of open cross sections.
Modelling of structures using finite element packages. Influence lines.
Prestressed concrete analysis and design, including statically indeterminate structures and losses of prestress.
Design of steel portal frames: modelling, analysis and design of elements and connections.
Masonry design: plain and reinforced walls subject to vertical and lateral loads.
Fire engineering: fire loads and containment, performance of structural materials, elements and systems under fire conditions, methods of providing fire resistance.
Practice
Exercises in prestressed concrete, steel portal frame and masonry design.
Use will be made of computer software where appropriate.

**Subject aims**
To introduce advanced topics in structural engineering analysis and design with a particular emphasis on computer application.

**Subject description**
Structural dynamics: free and forced vibrations of single and multi-degree of freedom systems.
Introduction to the finite element method: general formulation of an element stiffness matrix; the constant strain triangle and higher order elements.
Plastic analysis and design of multi-storey frames.
Precast concrete: advanced topics, end anchorages, partial prestressing.
Structural design with composite, cold formed steel and aluminium sections.

CE431 Water Engineering
No. of hours per week: two hours
Assessment: examination 70%, assignments 20%, laboratory work 10%

Subject aims
To enable students to apply principles of hydraulics to the design of water engineering systems.

Subject description
Theory
Water supplies: quantity and pressure requirements, supply mains, balancing storage, reticulation, fire services.
Sewerage reticulation: estimation of flow rates, hydraulic principles, design of sewers.
Stormwater drainage: urban drainage systems, design using the Rational method and hydraulic grade line, stormwater detention, pumped storage systems.
Water quality: parameters, criteria, types and source of pollution.
Laboratory work
Water quality experiments to demonstrate:
(a) the meaning of key water-quality parameters
(b) simple procedures suited to field measurement and monitoring.
Hydraulic experiments to demonstrate the performance of stormwater structures.

CE454 Structural Design
No. of hours per week: four hours
Prerequisite: CE256 Structural Design
Instruction: lectures, tutorials
Assessment: examination 60%, assessed work 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying, designed to familiarise students with the relevant codes of practice for concrete structures and for masonry structures.
Concrete structures code. Masonry code.

References
AS3600 Concrete Structures Code
AS3700 Masonry Code

CE461 Transport Engineering
No. of hours per week: three hours
Assessment: examination 80%, assignment 20%

Subject aims
To enable students to become proficient in the areas of traffic engineering, flexible pavement design, and road geometry.

Subject description
Theory
Traffic engineering: design, analysis and presentation of results for traffic surveys. Design of at-grade intersections.
Flexible pavements: principles, mechanistic modelling, and structural design. Design of sprayed seal, design of asphalt mixes, reseal design.
Road geometry: speed parameters, sight distance, horizontal transition curves, vertical curves, auxiliary lanes, overtaking provision.
Practical work and field experience
One traffic survey and its analysis.
Computer analysis of pavement performance.

CE470 Services
No. of hours per week: two hours
Prerequisite: MM269 Services
Instruction: lectures, field excursions
Assessment: examination 60%, assessed work 40%

A final-year subject of the Degree of Building Surveying dealing with specialist services encountered in commercial and office buildings.
The following services are covered: air conditioning, fire sprinklers, electrical services, specialist services, vertical systems: lifts and escalators. And in the area of drainage hydrology: surface and subsurface drainage: elements of hydrology, applications to roof and site drainage.
Groundwater. Hydraulics of pressure conduits: total energy line, hydrants hydraulic grade line, energy components, graphical representation, pipe friction formulae, minor losses, pump selection.

References
American Society of Heating, Refrigerating and Air Conditioning Engineers, ASHRAE Handbooks. (Fundamentals, Systems, Application and Equipment volumes), latest editions, 1985
Relevant Australian Standards and Codes of Practice

CE476 Construction Engineering (Elective)
No. of hours per week: four hours
Assessment: assignments 50%, oral presentations 50%

Subject aims
To introduce students to engineering practice in a range of construction activities.

Subject description
Excavation: excavation plant, drilling equipment, blasting rock, setting out of open excavations, support of open excavations.
Road construction: operations in road construction, quality control, plant output and selection, quarry operation, stabilisation of subgrades, roller compacted pavement, block pavement, geotextiles, layout of road works, administration of road works.
Concrete: production, delivery and inspection, crushed aggregate and sand plant, concreting plant, delivery systems; site inspection and quality control, formwork, curing, cold and hot weather concreting, shotcrete, precast concrete.
Foundation construction: dewatering, ground anchors, underpinning and shoring, footing and slab construction.
Bridge construction: methods for reinforced and prestressed concrete bridges, segmental bridge construction, girder launched construction.
CE477 Construction
This subject has three components:
CE477A Construction 3,
CE477B Construction 4 and
CE477C Foundation Systems.

CE477A Construction 3
No. of hours per week: three hours
Prerequisite: CE276 Construction
Instruction: lectures, site inspections
Assessment: examination 60%, reports 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying designed to give students an appreciation of the general principles and structural details for multi-storey structures.

References
Economical Steelwork AS6C Various Australian Standards

CE477B Construction 4
No. of hours per week: three hours
Prerequisites: CE276 Construction, CE477A Construction 3
Instruction: lectures, site inspections
Assessment: examination 60%, reports 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying designed to give students an appreciation of the general principles, structural details of special structures.
The topics are principles of structural action, materials, structural details, and methods of construction for precast and prefabricated structures, shells, folded-plate structures, cable and membrane structures, air-inflated structures, high-rise post-tensioned structures, and other special structures and inspections of appropriate sites.

References
To be advised

CE477C Foundation Systems
No. of hours per week: three hours
Prerequisites: CE276 Construction, CE283 Geomechanics
Instruction: lectures, laboratory work, field excursions
Assessment: examination 60%, reports 40%

A final-year subject of the Degree of Building Surveying designed to extend students’ knowledge in the area of geomechanics.

Textbooks
AS28701 Residential Footing Code Standards — Australia

References
Das, B.M. Principles of Geotechnical Engineering Site Investigations Code

CE478 Fire Technology
No. of hours per week: two hours for two semesters
Prerequisites: CE256 Structural Design, CE114 Applied Mechanics, CE256 Structural Design, MM269 Services
Instruction: lectures, tutorials, field excursions
Assessment: examination 60%, assessed work 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying which deals with the behaviour of fire in buildings, familiarises students with fire services and develops students’ understanding of the behaviour of elements and structures under fire.
The subject covers: causes of fire, products of fire, fire and smoke development, material behaviour under fire, fire loads and compartmentation. Fire and smoke detection and control. Human behaviour, evacuation procedures. Introduction to fire rated materials. Performance of structural members and assemblies under fire conditions. Australian Fire Codes. Fire tests and their application. Design of steel, concrete and timber members to resist fire. Protection of penetrations.

References

CE481 Geomechanics
No. of hours per week: three hours
Assessment: examination 85%. laboratory 15%

Subject aims
To enable students to design simple foundations considering both soil shear strength and settlement characteristics, to estimate the stability of soil slopes, and to apply the basic principles of site investigation.

Subject description
Performance of shallow foundations including immediate and consolidation settlement, bearing capacity for inclined and eccentric loads, lightly loaded (residential) foundations. Deep foundations including load capacity and settlement of single piles and pile groups.
Slope stability: slopes in cohesionless soils, cohesive soils, total and effective stress analysis including friction circle method, method of slices, computer analysis, use of stability charts, changes of slope stability with time, methods of stabilising slopes.
Site investigation including planning, sampling methods, insitu tests.

References
CE490  Construction Management
No. of hours per week: two hours in first semester, eight hours in second semester
Prerequisite: CE297 Management
Instruction: lectures, tutorials
Assessment: examination 60%, assessed work 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying, which introduces students to organisation and management theory, to provide an understanding of the processes applied to industrial relations in Australia, deals with types of contracts and administration of contracts and provides basic concepts of measuring and estimating materials and costs.
The subject covers four main areas of study.
Management
Organisation and management theory. Management problems in organisations and ways of dealing with them. Recruitment job specification and advertisement. (56 hours.)

Industrial relations
The structure of collective bargaining, conciliation and arbitration machinery, the structure and operations of trade unions and employer association, and the associated problems. Legislation dealing with equal opportunity and Occupational Health and Safety Workplace reform. Structure of awards. (28 hours.)

Contracts and specifications
Types of contracts and contract documents. Relationship between conditions of contract, specifications, drawings and bill of quantities. Understanding and preparation of specifications. Administration and enforcement of contract. (28 hours.)

Construction measurement and estimating
Measuring the materials and elements of a project. Application of basic rules to estimate cost. Quality control. Estimating field work. (28 hours.)

References
Cordell: Occupational Health and Safety Act

CE495  Engineering Management
No. of hours per week: three hours
Assessment: examination 40%, assignments 40%, class participation 20%

Subject aims
To develop an understanding of some aspects of the theory and practice of business management and construction techniques.

Subject description
Business strategy
Setting of objectives, measurement of performance, introduction to the marketing function, sales, market research, segmentation, etc. Innovation and entrepreneurial aspects.

Business theories and practice
Modern theories of management and current practices. For example: total quality management, value adding management, just-in-time.

Supervision and leadership, practical industrial relations, negotiating, arbitration and conciliation, occupational health and safety, selection and training, project teams and task forces.

Motivation, job enrichment, employee participation.

Time management, effective speaking, writing, reading, creative thinking, lateral thinking, technical communication skills.

Problem analysis, problem solving, decision making.

Construction techniques
Construction techniques: industrial and commercial buildings, medium and high rise buildings in steel, reinforced and prestressed concrete, tilt-up construction formwork in timber and steel, climbing formwork table and slip forms.

Concrete technology: materials, plant, mix design, high strength concrete, admixtures, delivery systems, formwork, placing, curing, testing.

CE496  Statutory Control
This subject has three components:
CE496A Statutory Control/Plan Checking 3,
CE496B Statutory Planning and
CE496C Professional Projects.

CE496A  Statutory Control/Plan Checking 3
No. of hours per week: five hours
Prerequisite: CE294 Statutory Control
Instruction: lectures, tutorials, assignments
Assessment: examination 60%, reports 40%

Subject aims and description
A final-year subject of the Degree of Building Surveying, intended to further develop students’ understanding of the principles underlying the relevant regulations, acts, codes and standards and their application to major projects.

Administration and law: in-depth study of building surveyor’s duties and his legislative responsibilities.

Functions: the consultative role of the building surveyor in council and private practice.

Acts and regulations: analysis of regulations and detailed study of total regulations and principles and a general ability to relate to all relevant codes and standards. Anomalies in the act and regulations and procedures to overcome these.

Redrafting of regulations.

Plan checking and assignments: assignments will cover aspects such as council reports and meetings, joint reports, fast track process, major building approvals, dealing with multi-storey buildings.

Textbooks
Building Code of Australia
Building Control Act
Victoria Building Regulations

References
Relevant Australian Standards

CE496B  Statutory Planning
No. of hours per week: two hours
Prerequisite: CE294 Statutory Control
Instruction: lectures, tutorials, field work
Assessment: project work 100%

Subject aims and description
A final-year subject of the Degree of Building Surveying, which deals with the regulatory and statutory aspects of urban planning.

Topics covered are: planning at the local and regional level.


References
Appropriate Planning Acts and Regulations
Professional Project
No. of hours per week: six hours
Prerequisites: CE294 Statutory Control, CE496A
Statutory Control Plan Checking 3, CE496B
Statutory Planning
Instruction: project work
Assessment: oral presentation 30%, final report 70%

Subject aims and description
A final-year subject of the Degree of Building Surveying, intended to develop students' initiative and self-education skills through work in an investigations project in an area relevant to the course.

References
As per other Statutory Control subjects

Investigation Project
No. of hours per week: four hours
Assessment: poster paper and oral presentation 10%, final report 90%

Subject aims
To develop students' initiative and self-education skills through work on an investigation project in an area relevant to the course.

Subject description
Students will work individually or in small groups on selected projects under staff supervision and will be required to meet regularly with their supervisor. In general, projects will be staff initiated and may arise from staff research or from proposals put forward by industry or by cooperative employers. Students may also suggest projects which will require departmental approval before proceeding.

Each project will require a literature survey and a theoretical and/or experimental investigation. Results and conclusions will be presented as a progress report in the form of a poster paper and an oral presentation, and a final written report at the conclusion of the project.

Municipal and Transport Engineering (Major Elective)
No. of hours per week: five hours
Assessment: examination, assignments/laboratory work

Subject aims
To extend students' knowledge and skills into areas of transport engineering, water engineering and municipal engineering, including environmental considerations.

Subject description
Transport Engineering (twenty-eight hours)
Freight transport: shipping, harbours, dredging, cargo containers, inland waterways, belt conveyors, air freight, solids pipelines, ore handling, freight terminals, capacity, selection of mode, physical distribution.
Passenger transport: fixed guideway, APT proposals, metro, airports, railway capacity, air traffic control, ferries, selection of mode.
Road engineering: application of queuing theory, freeway geometry, traffic law, road hierarchy, road construction, signing, bikeways, traffic generation, parking, pedestrianised streets, computer packages for transport analysis.
Environmental considerations: traffic noise, vehicle emissions.
Transport economics, transport administration, transportation planning.
Municipal Engineering (forty-two hours)
Powers and duties of local government engineers:
responsibilities for new developments, roads and traffic, transport management, local area traffic management, street design, road maintenance, parking requirements and control, property and equipment, solid waste management, recreation, including consideration of financial planning and constraints.
Planning: aspects of planning and building control relevant to local government. Environmental effects statements.
Surveying: introduction to photogrammetry and remote sensing.

Structural Engineering (Major Elective)
No. of hours per week: five hours
Assessment: assignments/laboratory

Subject aims
To broaden the students' understanding of the theory of structural behaviour and to consider some advanced topics in structural engineering.

Subject description
Energy methods in structural analysis: work and energy, principle of virtual work, theorem of minimum potential energy, reciprocal theorems. Applications to buckling problems.
The behaviour of plates and shells; yield line theory and strip methods.
Advanced topics of structural engineering: structural dynamics, earthquake loading and analysis, fire engineering, floor systems, reinforcing systems, prestressing systems, foundation design, special structural forms.

References
Gordon, J.E. Structures or, why things don't fall down. New York: Plenum Press, 1978

Water Engineering (Minor Elective)
No. of hours per week: three hours
Assessment: examination 60%, assignments 40%

Subject aims
To extend students' knowledge and skills into unsteady, non-uniform flow phenomena. On completion, students should be able to apply these principles to the solution of practical problems.

Subject description
Flood estimation methods, flood routing through reservoirs and retarding storages, streamflow routing, graphical methods, application of computers in analysis and design.
Urban drainage: major and minor systems, hydrologic and hydraulic performance of drainage systems for varying treatments, effects of urban redevelopment, on-site stormwater detention.

Structural Design (Minor Elective)
No. of hours per week: three hours
Assessment: examination 60%, assignments 40%

Subject aims
To extend students' knowledge and skills into unsteady, non-uniform flow phenomena. On completion, students should be able to apply these principles to the solution of practical problems.
Subject description
A selection of more advanced structural design projects chosen to emphasise the interpretation of current design codes and current design practices.

CE555 Civil Design
No. of hours per week: five hours
Assessment: assignments 100%

Subject aims
To develop students' abilities to apply theoretical knowledge to a range of practical design situations.

Subject description
A range of designs will be chosen from structural and civil engineering areas of the course. Assignments which require creative solutions will be included. Problem solutions may be in the form of written reports, design computations, drawings and models, as appropriate.

In addition students will be given a series of lectures in the design process aimed at coordinating activities involved.

CE576 Construction Engineering (Major Elective)
No. of hours per week: five hours
Assessment: class test 40%, assignments 30%, oral presentation 30%

Subject aims
To develop students' knowledge and skills in the construction area.

Subject description
The construction industry: organisation, economy and opportunities, entrepreneurial construction activities, types of contract, design and construct contracts, project management, fast track.

Plant: output and performance of bulldozers, tractor scrapers, excavators, truck cycles.

Road construction: quarry operation, selection, performance and output of road plant, quality control, stabilisation of sub-grades, roller compacted pavements, block pavements, geotextiles, road diversions and other construction requirements.

Bridge construction: steel, reinforced and prestressed concrete bridges, segmental and girder launched construction.

Piles: types, selection of precast, insitu, or steel piling, installation methods, load tests.

Tunnelling: soft ground and rock tunnelling, tunnelling machines, tunnel linings, removal of excavated material, inlet and outlet structures.

Pipelines: loads on precast and insitu pipelines due to different methods of excavation and backfilling, excavation and shoring, joints, laying techniques for precast pipelines.

Dams and embankments: earth, rockfill and mass concrete gravity dams and embankments, arch dams, outlet works and spillways.

CE582 Geomechanics (Minor Elective)
No. of hours per week: three hours
Assessment: assignments/laboratory work 100%

Subject aims
To extend students' knowledge of geology and soil mechanics and introduce them to rock mechanics and give them an appreciation of the high level of experience and "art" required to practice in the area of geomechanics.

Subject description
Earth pressure problems, braced excavations, tie-back walls and soil anchors; introduction to soil dynamics; introduction to rock mechanics; further selected topics in soil engineering and engineering geology.

CE596 Engineering Management
No. of hours per week: five hours
Assessment: class tests 35%, assignments 65%

Subject aims
To make students aware of the role of the engineer in society and of effects of man on the environment. To extend basic management concepts introduced earlier in the course into specific areas of management practice, and to give students a background into some common and important construction practices.

Subject description
The role of the engineer in society, professional institutions, professional ethics.

Economic aspects
Global ecology, conservation-versus-development, sustainable use of renewable resources, control of use of non-renewable resources, values of natural systems, wilderness and landscape, environmental impact assessment, environmental rehabilitation.

Project management
Project management: initiation of projects, feasibility studies.

Construction documentation: conditions of contract, bonds, specifications, schedule of quantities, contract drawings.

Tendering procedures: estimating, cash flow forecasting.

Construction control: critical path methods, cost control, construction documentation, claims, partial and final certificates.

Industrial relations: trade unions, negotiations, arbitration and conciliation.

Contract disputes: the role of the arbitrator, legal procedures, procedures for obtaining planning and building approval, permits, certification.

Formwork: design and certification of formwork.

Finance
Budgets: management reporting systems, financial control of projects.

Cost-benefit analysis: discounted cash, flow present worth criteria, buying or hiring plant, life-cycle costing, project evaluation, profitability, evaluation of tenders, replacement of plant.

Legal aspects
The Australian legal system, commercial law regarding employers, employer liabilities. Contracts for the provision of engineering services by practices and employees, agreements involving resort to arbitration, property law concepts relevant to the practice of engineering, patents, copyright, trademarks and industrial design, the consequences in civil law for the careless provision of engineering services or advice (the tort of negligence). Companies, partnerships, trusts and joint ventures as vehicles or entities for the practice of engineering, Planning law: acts and legislation relevant to major projects.

CE670 Construction Technology
No. of hours per week: four hours
Instruction: lectures/tutorial/discussion
Assessment: by assignment work

Subject aims
To develop a knowledge of a technological resources available for the execution of a construction project.
Subject description
Planning of construction programs, resource allocation, plant and equipment, soil investigation and data interpretation, construction materials, and techniques.

Textbooks

References

Practical work
Site visits; training films on plant handling, syndicate discussion or plant choice etc.

CE690 Civil Engineering Project Control
No. of hours per week: four hours
Instruction: lecture/tutorial/discussion
Assessment: by assignment work

Subject aims
To introduce the techniques for establishing and maintaining control of a project.

Subject description
General conditions of contract; forms of contract; drawings, specifications and quantities; estimating; scheduling and programming; quality control; risk analysis documentation of work progress and costs; progress payment procedures; industrial safety.

Textbooks

References

CE691 Civil Engineering Management
No. of hours per week: four hours
Instruction: lecture/tutorial/discussion
Assessment: by assignment work

Subject aims
To develop an awareness of efficient site management techniques.

Subject description
Responsibilities of a project manager; responsibility of site engineer; construction site organisation; site office procedures; contractor-principal relations; industrial arbitration; company structures; personnel management; negotiations; arbitration and conciliation.

Textbooks
Smith, M. Contracts. 2nd ed, Sydney: Butterworths, 1988

References
Hyman, R. Strikes. Fontana, 1984

Practical work
Site visits

CE692 Communications
No. of hours per week: four hours
Instruction: lecture/tutorial/discussion
Assessment: written reports and class presentations

Subject aims
To develop the students understanding and practice of communication both written and verbal.

Subject description
The theory and practice of communications. Students take part in a program designed to increase their personal capacities to understand and communicate well at different levels of oral and written communication, particularly as project managers in the construction industry. To this end various techniques are used and evaluated by the group.

The course also includes a brief study of the historical role of the engineer in the development of human communications, placing the profession in its social context. The purpose of the course is to enable the engineer to evaluate professional problems more competently and to communicate ideas more effectively.

Textbook

References

Practical work
Participation in class discussions is required
CE693  Introduction to Contract Law
Instruction: lectures/tutorials
Assessment: by assignment work

Subject aims
A subject in the Master of Technology (Construction) intended to enable students to gain an understanding of the relevant law applicable to the building and construction process and to provide the students with the necessary skills to administer a building project.

Subject description
Contract types, contract documents, conditions of contract, choice of contract type relating to risk and financial considerations, site documentation, computer applications for site administration of contracts.

Legal system in Australia, sources of law, court structures, system of judicial precedence, types of law: criminal, civil, consumer, worker protection, law of partnership, law of bankruptcy.

Textbooks

References

CE770  Construction Engineering
No. of hours per week: four hours for two semesters

A subject in the Graduate Diploma in Civil Engineering Construction reviewing construction techniques for civil engineering projects.

Subject description
Construction techniques for highways, bridges, railways, airports, tunnels, pipelines, foundations, buildings, dams, water supply structures, sewerage.

CE771  Construction Project Control
No. of hours per week: four hours

A subject in the Graduate Diploma in Civil Engineering construction which introduces students to a critical study of all aspects of a construction project.

Subject description
Case studies of construction projects by report and discussion.

CE772  Construction Technology
Instruction: lectures/tutorials
Assessment: assignment work

Subject aims
To develop an understanding of construction and building systems and their most efficient use.

Subject description
Construction and building systems; prediction of performance; cost of production; system optimisation; computer based system modelling; maintenance and safety.

Practical work
Computer modelling of systems.

Textbooks

References
Harris, F. and McCaffer, R. Modern Construction Management. 2nd ed, London: Granada, 1983

CE773  Research Project
Instruction: practical work requiring regular meetings with supervisors
Assessment: by written reports, thesis and presentations

A subject in the Master of Technology (Construction).

Subject aims
To develop students' knowledge, initiative and self education skills through work on a research project in an area relevant to the course.

Subject description
This subject gives students the opportunity to apply subject matter studied in earlier subjects to construction and building related problems. Students will work individually or in small groups on selected projects which, where possible, will be industry based and sponsored and have direct relevance to the students' area of employment. Interaction between professional engineers in industry, supervising staff at Swinburne and students will help develop the students' competence. External supervisors may be appointed in addition to staff supervisors.

Projects will usually require a literature survey and a theoretical and/or experimental investigation. Results and conclusions will be presented in oral and written report form.

CE790  Financial Project Control
No. of hours per week: four hours

Subject aims and description
A subject in the Graduate Diploma in Civil Engineering Construction which introduces financial concepts that are important in evaluating projects, in financing projects; in financial control and in determining the profitability of projects.

Cost control; financial control; determination of profitability; evaluation of projects; evaluation of sources of finance.

CE791  Human Resource Management
Instruction: lectures/tutorials/seminars
Assessment: assignment work and seminar papers

Subject aims
To make the student aware of the technique of human resource management.

Subject description
Client — contractor, sub-contractor relations; safety, personnel administration; industrial psychology, structure and role of the trade unions; human resource management.

Practical work
Visit arbitration court.
Textbooks

References

CE792 Health and Safety in Construction
Instruction: lectures/tutorial/seminars
Assessment: assignment work and seminar papers

Subject aims
To make the student understand the effect of construction work on society and the environment.

Subject description
Control of pollution, effect of construction work on the environment, noise control, methods of dealing with objections from the public to proposed works, statutory regulations regarding safety and protection of the public, demolition requirements, hazardous aspects of construction, occupational health and safety, workcare.

Practical work
Assignment work and seminar papers. Inspection of site work.

Textbook

References

CE793 Construction Law
Instruction: lectures/tutorial/seminars
Assessment: assignment work and seminar papers

Subject aims
To give the student an appreciation of the legal and contractual responsibilities within construction operations.

Subject description

Textbooks

References
Caffrey, A. Guidebook to Contract Law in Australia. 4th ed, North Ryde, N.S.W.: CCH Australia, 1991
Farquharson, Minimising and Resolving Engineering Disputes. Sydney: Law Book Co., 1986

CE794 Financial Management
Instruction: lecture/tutorial/seminar
Assessment: assignment work and seminar papers

Subject aims
To give the student knowledge of the financial consideration of company operations from site level to financial strategy.

Subject description
Principles of economics, cost control systems, cash flow forecasting, financing of projects, bidding and negotiation of contracts, computer modelling, bidding models, feasibility of projects, assessment of viability.

Textbooks

References

Practical work
Computer modelling

EA411 Non-Newtonian Technology

No. of hours per week: four hours for two semesters
Assessment: laboratory work and examination

A subject in the Graduate Diploma in Chemical Engineering.

Subject aims
To provide the student with a thorough understanding of Non-Newtonian flow and heat transfer.

Subject description
A review of Newtonian fluid flow, heat transfer and mixing. Principles governing the behaviour of Non-Newtonian fluids, viscometry, heat transfer and mixing. The theoretical principles underlying the application of this work to some practical situations such as shear thinning.

References
**EE181 Engineering Science — Electronics and Computing**

No. of hours per week: four hours for two semesters

A first-year subject in all degree courses in engineering.

**Subject aims**

To introduce the principles of electrical circuits and electronics to engineering students and to make links between electrical and other engineering disciplines.

To introduce fundamental concepts of computing, familiarity with personal computers and some proficiency in the use of the PASCAL language for constructing solutions to engineering problems.

**Syllabus (Semester 1)**

- Ideal circuit elements (electronics and circuits)
- SI units in electrical engineering
- Resistance, inductance, capacitance, voltage sources, current sources, energy storage and energy dissipation
- Linear circuit analysis (electronics and circuits)
- Kirchhoff’s Voltage Law (KVL), Kirchhoff’s Current Law (KCL)
- Superposition theorem.
- Sinusoidal circuit analysis — Part I (electronics and circuits)
- Reason for emphasis upon sinusoidal analysis. Peak, rms, average values. Response to sinusoidal excitation of resistive, inductive and capacitative elements. The phasor representation and the phasor diagram.
- Digital electronic concepts (electronics and circuits)
- Computing Part I
- Brief history of computer.
- Introduction to computer systems including the disk operating system (DOS) and the Turbo Pascal development environment.

**Introductory Pascal** including syntax diagrams, control structures, elementary types, continuing Pascal including subranges types, arrays, procedures, functions, variable and value parameters, predefined functions, identifier scope, enumerated types, sets, records, with statements, text files. Elementary input/output interfacing techniques using Pascal.

**Syllabus (Semester 2)**

- Computing Part II
- Sinusoidal circuit analysis — Part 2 (electronics and circuits)
- Resonance. Introduction to frequency response.
- Analogue electronic circuits (electronics and circuits)
- Power calculations (electronics and circuits)
- Instantaneous and average power. Real power, reactive power, apparent power and power triangle. Power factor and power factor correction. Complex power. **Power measurement**.
- Transformers (electronics and circuits)
- Introduction to magnetic fields. **EMF** equation. Ideal transformer including voltage and current ratios, power transfer, impedance reflection/referral. Maximum power transfer, impedance matching.

**Textbooks**

- Bishop, J.M. Turbo Pascal Precisely: Addison-Wesley, 1992
- EE188 Administrative and Resource Package. Swinburne, 1994
- EE188 Computing Resource Package. Swinburne, 1994 (compulsory)

**References**

- Borland. Turbo Pascal User’s Guide. Version 5.0 or 5.5
- Carmony, P. Turbo Pascal Reference Guide. Version 5.0 or 5.5
- Dos Reference Manual
- Dos Technical Reference
EE254 Electrical Design
No. of hours per week: two hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lectures/tutorials/laboratory
Assessment: project/examination/assignment

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To introduce the principles of coil design, heating and cooling, D.C. power supply design, printed circuit board design, amplifier design and programmable logic controllers.

Subject description
Introduction to electrical design: electrical, magnetic and physical properties of materials.
Coil design: series and shunt coils. Winding area, space factor, temperature rise and power dissipations. Project.
DC power supplies: transformers, rectifiers, regulators and IC regulators. Split supply project.
Printed circuit board design: track sizing, standards, construction methods and software tools.
Amplifier design: BJT amplifiers, bias conditions and small signal model. Two stage amplifier design project. Software tools. Introduction to programmable logic controllers.

Texts/References

EE258 Electrical Machines
No. of hours per week: four hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To introduce the principles of magnetic circuits, electromechanical energy conversion, transformers, induction machines and power electronics.

Subject description
Introduction to electromechanical energy conversion: voltage-current, energy storage and force/torque expressions for singly and doubly excited transducers. Means of torque production.
Introduction to rotating machinery: construction and principles of operation of three-phase induction machines, direct current machines.

Simple trigger circuits. AC to DC conversion: single phase and three phase half wave and full wave converters using diodes. Average voltage and ripple factor. Converters using SCR’s with a resistive load. Application to speed control of a DC motor. An introduction to harmonic content and effective power factor.

References

EE263 Computer Systems Engineering
No. of hours per week: three hours for two semesters
Prerequisites: EE188 Engineering Science, Electronics and Computing
Instruction: lectures/laboratory
Assessment: examination/assignment

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
For students to demonstrate a sound understanding of data abstraction and structured programming in PASCAL, and basic computer organisation.

Subject description
Data structures: Pascal pointer types, lists, stacks, queues, trees, directed and undirected graphs and algorithms for the manipulation of these structures, file types and organisations.
Elementary computer organisation using Pascal as the descriptive language: the Von-Neumann fetch-execute cycle, simple single register architectures, their constraints and evolution to multiple register architectures (immediate, direct, register indirect and indexed addressing modes).
Pascal to assembly language mappings for a multiple-register architecture. Informal treatment of parser construction from a language’s syntax using assembly language as an example. The assembly process. The fetch decode and execution process for the multiple-register machine.
Internal representation of data types. Integer and floating point arithmetic.

References

EE282 Communication Principles
No. of hours per week: two hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment
A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To introduce the principles and applications of communication systems.

Subject description
General concepts: communication systems, spectral analysis, fundamentals of signal transmission.
Analogue communications: amplitude modulation/demodulation methods, angle modulation/demodulation methods, receivers, stereo broadcast.
Digital communications: pulse amplitude modulation/demodulation, pulse coded modulation/demodulation, RF digital modulation/demodulation methods.
Multiplexing: TDM and FDM.

Texts

References

EE283 Electrical Circuits
No. of hours per week: three hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lecture/tutorial/laboratory
Assessment: examination/laboratory

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
The aim of this subject is to consolidate the circuit theory topics dealt with in previous subjects and to give students a firm foundation of circuit analysis techniques used in electrical engineering.

Subject description
Circuit elements: review R, L and C as element showing relations between v and i for each including response to sinusoid (complex numbers), Dependent sources, Non-linear elements in circuits.
Circuit analysis: revision of SUPERPOSITION, THEVENIN, and NORTON (includes dependent sources), Tee-pi transformations. Formation of MESH and NODAL equations (dc and ac circuits) to the stage of writing equations in matrix form. Introduction to maximum power transfer for dc and ac circuits, Loci diagrams.
Three phase circuits: introduction to 3 phase voltage generation, Phasor diagrams, 3 phase connections and solution to problems, Power and power measurement, VAR correction.
Mutual inductance: concepts of common flux, flux linkages and induced voltages, Treatment as a circuit element in mesh and nodal equations.
Two port networks: parameters used for 2 port networks inc. Z, Y, cascade and hybrid, showing how the interconnection of the networks will depend on which parameters are to be used, Defining parameters and calculating their values.
Non-sinusoidal waveforms: this topic examines the response of linear networks to various periodic non-sinusoidal waveforms, and non-periodic inputs. The Fourier series and integral (Fourier Transform) is used as a tool for this analysis, The Fast Fourier Transform is also introduced.
Electrical transients
(a) Classical approach: the response of first order circuits (RL) and second order circuits (RLC series or parallel) to step and sinusoidal excitations will be studied using the differential equation approach.
(b) Laplace techniques: these techniques will be applied to more general circuits and excitations by transforming the circuit and writing circuit equations in terms of the Laplace operator "s" before inverting to the time domain.

Text

References

Suggested work book

EE287 Electronics
No. of hours per week: three hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lectures/laboratory
Assessment: examination/laboratory

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To provide an introduction to the operation and analysis of electronic devices, both analog and digital.

Subject description
Solid state devices: non-linear and linear electrical models, for BJT, JFET, and MOSFET, and their use in analysis of switching and analog signal processing applications.
Basic integrated circuit logic technologies: TTL and CMOS, electrical characteristics, ECL and MOS overview.
Combinational logic: SSI and MSI common functional blocks, standard symbols and behavioural descriptions, System design techniques using SSI, MSI, ROMs and PLAs.
Sequential logic: analysis of bistable and monostable circuits.
behavioural description of latches, master-slave and edge triggered flip-flops, MSI registers and counters.

Synthesis of system controllers using finite state machine behavioural descriptions using MSI and PLDs.

Text/References

EE363 Computer Systems Engineering
No. of hours per week: four hours
Prerequisites: EE263 Computer Systems Engineering, EE287 Electronics
Instruction: lectures/laboratory
Assessment: examination/assignment/laboratory work

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
Computer architecture: to familiarise the student with the fundamentals of computer architecture. Students will gain an understanding of programming at the assembly code level as a foundation for their understanding of higher-level languages. Students will be exposed to the basic components that make up a computer system.

Software engineering: to provide a transition from a basic understanding of programming languages gained in earlier years to the fundamentals of software engineering. Students should be able to apply the techniques of modular programming and software engineering to the design and implementation of modest software tasks.

Subject description
Computer architecture
Computer architecture overview
- Division into units: CPU, memory I/O
- Bus structure
- Harvard architecture — memory addressing.
Machine model (M68000 primarily, 8086 reference)
Assembly language programming
- Number systems and arithmetic (review)
- Binary
- 2’s complement
- Add, sub, divide and multiplication
Addressing modes
Access to data
Data sizes
Indirection
Implementing stacks
Instruction classes
Intro to assembly/linking/simulation
Modular programming: use of subroutines — hardware stack
Simple program examples
Reset operation
Arithmetic operations
Hardware
- Memory types (EPROM etc., static etc.)
- System timing (overview)
- Buffering (overview)
- Memory decoding
- Interfacing (M68230, M68681 duart)
Assembler — HLL (CO) interface
Software engineering
Introduction to software engineering concepts
Software design methods
Program design

Modularization
Performance metrics
Design and performance measurement tools.
Theoretical concepts will be illustrated by practical work utilising the tools available in UNIX/C environment.

References
Antonakis, J.L. The 68000 Microprocessor — Hardware and Software Principles and Applications. 2nd ed. NY: Macmillan, 1993

EE383 Electromagnetic Fields
No. of hours per week: two hours
Prerequisites: SM294 Engineering Mathematics, SP294 Engineering Physics
Instruction: lectures/tutorial
Assessment: examination/assignment

A third-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To review the basic laws of electromagnetism, and to extend the application of these laws to transmission line performance and to free space propagation.

Subject description
Magnetic flux and flux linkage; magnetic field intensity, Ampere's Law, Faraday's Law.
Field conditions at material interfaces.
Poisson's equation; Laplace's equation.
Solution of electrostatic field problems: solutions of Laplace's equation. Application of image and finite difference methods. Two terminal capacitance. Multiple conductor systems; calculation of partial and total capacitances.
Solution of magnetostatic field problems: magnetic vector potential. Mutual inductance, internal and external self inductance.

Electromagnetic waves: time varying fields; magnetic induction, displacement current. TEM waves in free space, phase velocity, Intrinsic impedance.
Transmission lines: field and circuit analysis of transmission lines; propagation constant, characteristic impedance.
Discontinuities in and termination of transmission lines; reflections and standing waves, input impedance, impedance matching; steps and pulses on lines.
Plane waves in materials: dispersive media, group velocity.
Reflection and transmission of waves normally incident on interfaces: between dielectrics; between dielectric and conductor. Propagation in good conductors, skin depth. Power flow, Poynting vector.
Refraction, total internal reflection. Guided waves between dielectric-dielectric and dielectric-conductor interfaces.

**Texts/References**
Cheng, D.K. Field and Wave Electromagnetics. 2nd ed, Reading, Mass.: Addison-Wesley, 1985
Kraus, J.D. Electromagnetics. 4th ed, McGraw-Hill, 1992

**EE384 Electrical Power and Machines**
- No. of hours per week: three hours
- Prerequisites: EE258 Electrical Machines
- Instruction: lectures/tutorials/laboratory
- Assessment: examination/assignments

A third-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**
To extend the treatment of transforms to the three phase case; to extend the treatment of the induction motor to a full consideration of steady state behaviour; to introduce the step motor and the brushless d.c. motor. To extend the work in power electronics.

**Subject description**
Power electronics: devices. Extension of work to cover the thyristor family of devices.
Power transistors: power bipolar junction transistor, power MOSFET and the insulated gate bipolar transistor. Applications a.c. to d.c. conversion using a lagging power factor load including the d.c. motor. Fully and partly controlled conversion, generation of harmonic and power factor control. d.c. to a.c. conversion. The use of power transistors in inverter circuits as applied to an uninterruptible power supply and the variable frequency control of the speed of an induction motor. Battery technology and alternative energy sources.

**References**

**EE386 Electronics**
- No. of hours per week: three hours
- Prerequisites: EE287 Electronics
- Instruction: lecture/tutotiral/laboratory
- Assessment: examination/assignments

A third-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**
To develop the principles of negative feedback amplifiers, and digital/analog system interfacing.

**Subject description**
Design and analysis and simulation techniques for discrete analog circuits: worst case design to meet minimum performance specifications, selection of configuration alternatives for implementing direct coupled complementary symmetry large signal amplifiers.

**Texts/References**

**EE388 Communications**
- No. of hour per week: three hours
- Prerequisites: EE282 Communication Principles
- Instruction: lectures/laboratory
- Assessment: examination/assignments

A third-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**
To present an introduction of the basic analysis tools and techniques of digital processing of signals outlining advantages, drawbacks and limitations.

**Subject description**
Principles and applications of discrete systems.
- Basic concepts of signals and discrete systems, including the sampling theorem.
- Discrete models for linear time invariant systems and analysis techniques.
- Sinusoidal steady state analysis of discrete systems, inclusive of the frequency response and some fundamentals of digital filtering.
- Applications of the z-transform to discrete system analysis.
- The discrete Fourier series and its uses.
- Introduction to the Fast Fourier Transform and its uses.
**EE389 Linear Systems and Control**

No. of hours per week: four hours

Prerequisites: EE283 Electrical Circuits, EE258 Electrical Machines, SM294 Engineering Mathematics

Instruction: lectures/laboratory

Assessment: examination/assignment

A third-year subject in the degree of Bachelor of Engineering (Electrical—unstreamed).

**Subject aims**

To introduce the concept of feedback in a linear system and to develop analytical techniques to solve linear control systems problems.

**Subject description**


**Texts/References**


**EE403 Engineering Project Management**

Prerequisites: nil

Instruction: seminars

Assessment: assignment

A fourth-year core subject in the degree of Bachelor of Engineering (Electrical—unstreamed).

This subject is to be taken during the students' second industrial period. There will be no formal lectures for this subject. Students will work from a text and submit a combination assignment.

**Subject aims**

To provide students with an understanding of engineering project management involving both personnel and plant management.

**Subject description**

The role of the manager in a high technology environment; senior management expectations, skill requirements of high technology managers, dealing with priority problems, understanding matrix organisations. Working effectively with technical personnel; understanding professional productivity, leadership effectiveness, creating stimulating work environment, managing innovation and creativity, dealing with risk and uncertainty leadership expectations, delegating effectively, evaluating technical performance. Planning and organising the work, examining the work process, phased approach to engineering developments, developing schedules and measurable milestones. Manpower planning, software for computer-assisted resource scheduling and program planning. Control of technical work; available software, optimizing resources, measurement of performance, tools for measurement and reporting. Project management methodology; definition phase, planning phase, scheduling phase, control phase, advantages of project management.

**Textbook**

EE456  
**Electrical Design**

No. of hours per week: three hours  
Prerequisites: EE384 Electrical Power and Machines, EE386 Electronics  
Instruction: lectures  
Assessment: assignment

A fourth-year subject in the electrical power and control engineering stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**

To give practice in the application of the design process in particular aspects of electrical power and control engineering. To allow each student to select a topic for a design project.

**Subject description**


Design topic selection: each student is to select a topic and gain approval of it by a staff member. The staff member becomes the design supervisor. Students are expected to carry out the preliminary design procedures up to the stage of detailed calculations in the fourth year of the course, and to complete the construction, testing and evaluation stages of the process as their final year Design Project. Students are to be given guidance in the use of computer and manual methods of literature searching.

**Text/References**

To be advised

EE458  
**Electrical Design**

No. of hours per week: three hours  
Prerequisites: completion of the third year of the degree of Bachelor of Engineering (Electrical — unstreamed)  
Instruction: lectures  
Assessment: assignment/poster

A fourth-year subject in the communications and electronics stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**

To introduce the student to selected design considerations in the communications and electronics stream of the course; and to allow the student to select a topic for the major design and project activities of the fifth year of the course.

**Subject description**

The process of design, functional partitioning, hardware description languages, basic features of VHDL, design entities, architectural bodies, block statements, processes, data types, packages, control statements, basic modelling techniques for combinational and sequential logic, chip level modelling, system modelling, application of VHDL in the areas of chip-level modelling and test generation, chip level emulation in parallel, human engineering, reliability considerations, maintainability, documentation. Preparation of a research project and a technical poster.

**Text/References**

To be advised

EE459  
**Electrical Design**

No. of hours per week: three hours  
Prerequisites: EE363 Computer Systems Engineering  
Instruction: lectures  
Assessment: test/assignment

A fourth-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**

For students to develop and demonstrate a sound understanding of the various aspects of digital system design.

**Subject description**

Aspects of digital system design including a formal treatment of design for testability including observability and controllability, generation of test sequences including self test and automatic fault isolation to smallest replaceable component. Redundancy schemes, ECC in memory systems. Algorithms for, simulation, partitioning, placement and routing. An introduction to hardware description languages and automatic synthesis.

Students select a design topic and carry out a formal design study which may be completed in the fifth year of the course as their design project.

**Texts/References**

EEE Design and Test of Computers Magazine  
EEE Transactions on Computer Aided Design  
EEE Transactions on Computers  
Proceedings of Design Automation Conferences

EE465  
**Engineering Systems Software**

No. of hours per week: three hours  
Prerequisites: EE363 Computer Systems Engineering  
Instruction: lectures/computer laboratory tutorials  
Assessment: examination/assignments

A fourth-year subject in all streams in the degree of Bachelor of Engineering (Electrical — unstreamed).

**Subject aims**

The aim of the subject is for students to develop a sound understanding of advanced software engineering principles and techniques applicable to computer based systems in engineering, and to introduce the fundamental elements of operating systems as a base for advanced studies in real-time systems.

**Subject description**

Principles of software engineering including requirement analysis, specifications, design, verification and quality assurance. Operating systems including the internal structure and operation, using UNIX and MSDOS as case studies.

**References**

IEEE Software Magazine and Transactions on Software Engineering  
EE467  Computer Communications
No. of hours per week: three hours
Prerequisites: EE363 Computer Systems Engineering, EE386 Electronics, EE388 Communications
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignments

A fourth-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To introduce students to the basic concepts and techniques of data communications, computer networks and layer protocols.

Subject description
Data communication networks and open system standards.
Electrical interface.
Data transmission.
Protocol basics.
Data link control protocols.
Local area networks.
Metropolitan area networks.
Wide area networks.

Text/References
Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd ed, Reading, MA: Addison Wesley, 1992

EE474  Computer Systems Engineering
No. of hours per week: five hours
Prerequisites: EE287 Electronics, EE263 Computer Systems Engineering, EE363 Computer Systems Engineering
Instruction: lectures/laboratory
Assessment: examination/assignments/laboratory exercises

A fourth-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To broaden the students' knowledge of computer architecture and to examine the implementation techniques applicable to high performance computer hardware.

Subject description
Comparative computer architecture studies including rationale and tradeoffs for CISC, and super scalar RISC and DSP architectures. Introduction to parallel computer organisations including taxonomy and communication networks.
Processor organisation: data path and control implementation (hardwired and micro-programmed), pipelining techniques (reservation tables, scoreboards). Memory organisation: caches, interleaving, disks (organisation, accessing, algorithms), virtual memory. Input/Output devices: application specific controllers (graphics, communications).

Text

References
Mimar, T. Programming and Designing with the 68000 Family Prentice-Hall, 1991

IEEE "Computer" (various papers)
IEEE "Micro" (various papers)

EE475  Electrical Power and Machines
No. of hours per week: five hours
Prerequisites: EE258 Electrical Machines, EE384 Electrical Power and Machines
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignments

A fourth-year subject in the computer power and control stream of the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To introduce the principles of loadflow, symmetrical components and economic operation. To build on concepts of power systems, power electronics and electrical machines.

Subject description
Part A — Power systems
Loadflows: load characteristics, use of loadflow studies. Gauss-Siedel and Newton Raphson methods.
Part B — Electrical machines
The commutator machine: review of construction; properties of the mechanical commutators; block diagram representation of linearized equations, transfer functions; transient response of d.c. machines; matrix representation of equations, application of a.c. series motor. Analysis of non-linear relationships, d.c. series motor.
The single phase induction motor, origin of equivalent circuit, operating characteristics. The brushless d.c. machine, construction and applications.
Part C — Power electronics
The d.c. chopper with applications. Partly controlled and fully controlled converters for d.c. motor drives: regenerative braking. Introduction to the variable frequency inverter and its application VPs's and a.c. machine drives.

Texts/References
Part A

Part B

Part C
**EE476 Electronics**

No. of hours per week: three hours
Prerequisites: EE386 Electronics
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment

A four-year subject in the electrical power and control engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To cover the analysis of analog integrated circuits and the hardware aspects of the microprocessor.

**Subject description**
Analogue electronics
Buck and boost switch mode power supplies and their basic operating principles. Switching control requirements for buck and boost switch mode supplies. Main component specifications for buck and boost mode supplies. Transformer coupled switch mode supply topologies. Power factor correction. Quasi-resonant supplies.

Microprocessor electronics
Interfacing and I/O programming of 80X86/80X86 microcomputers. Hardware and software interrupts, peripheral chips: keyboard scanners, display drivers, UARTs, DMA controllers, disk controllers, bus timing, memory interfacing, virtual addressing and memory management unit. Bus timing.

Testing techniques.

**Texts/References**

**EE482 Communications**

No. of hours per week: four hours
Prerequisites: EE363 Computer Systems Engineering, EE386 Electronics, EE388 Communications
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignments/laboratory reports

A four year subject in the communication and electronics stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To introduce students to the basic concepts and techniques of information theory, data communications, computer networks and layered protocols.

**Subject description**
Part A
Investigation of RF communication and optical fibre data transfer. This is a project based section of the course where students form small groups and learn to work as teams. Other key points of knowledge are time management and coordination of the members of each group.

Students may choose from the following projects:
- Simple transmitter — power amp and antenna for freq. > 150MHz
- Simple receiver — antenna and receiver for freq. >150MHz and simple field strength meter

**EE483 Electronics**

No. of hours per week: four hours
Prerequisites: EE386 Electronics
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignments

A four-year subject in the communication and electronics stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To cover the analysis of analog integrated circuits and the hardware aspects of the microprocessor.

**Subject description**
Microprocessor electronics
Interfacing and I/O programming of 80X86/80X86 microcomputers. Hardware and software interrupts, peripheral chips: keyboard scanners, display drivers, UARTs, DMA controllers, disk controllers, bus timing, memory interfacing, virtual addressing and memory management unit. Bus timing.

Digital signal processing

**References**
Control Systems

No. of hours per week: three hours
Prerequisites: EE384 Electrical Power and Machines, EE389 Linear Systems and Control, SM394 Engineering Mathematics
Instruction: lectures/laboratory
Assessment: examination/assignment

A fourth-year subject in all streams of the degree of Bachelor of Engineering (Electrical).

Subject aims
To introduce the analytical technique of state variable analysis and to use that and classical techniques to design control systems, linear and non linear to meet a set of specifications. To introduce a concept of discrete time control systems.

Subject description

State variable method of analysis of continuous and discrete time systems. Multivariable control systems. State models output equation feedback equations and de-coupling.
Design of control systems from a classical approach using compensators P.I.D. controllers and state feedback.
Introduction to non lineairities and their effect on the system.

Describing functions.

Texts/References
Dorf, R.C. Modern Control Systems. 6th ed, Reading, Mass.: Addison Wesley, 1992

Management Practice

No. of hours per week: three hours
Prerequisites: EE402 Management Fundamentals
Instruction: lectures/tutorials/seminars
Assessment: examination/assignments/class participation

A final-year subject in all streams of the degree of Bachelor of Engineering (Electrical).

Subject aims
To provide students with a satisfactory understanding of the subject material in so far as it affects the practice of management.

Subject description
Business strategy and plans.
Managing communications.
Planning, leading and controlling.
Ethics, professionalism and the engineering manager.
Organisation theory.
Industrial relations and enterprise bargaining.
Total quality management.
Achieving a quality culture.

Using quality as a competitive strategy:

supervision and leadership.

project teams and task forces.

References

Additional references will be provided by the lecturers for their topics.
A final-year subject in the communication and electronics stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To gain insight into the behaviour of telecommunication and computer networks, with particular emphasis on performance analysis and optimisation.

**Subject description**

**References**
Girard, A. Routing and Dimensioning in Circuit-Switched Networks. Addison Wesley, 1990

EE556 Project
Prerequisites: EE456 Electrical Design, EE458 Electrical Design, EE459 Electrical Design
Instruction: supervision of thesis
Assessment: thesis/presentations/seminar attendance

A final-year subject undertaken by all fifth year students, for one semester, in the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To give each student the experience of completing a project, including the testing, evaluation and reporting phases of the design process.

**Subject description**
Each student will be required to nominate a project topic and to negotiate an acceptable specification for the work with a member of staff who shall be the supervisor of the project. The topic for the project may either be selected from a list of suitable topics proposed by staff members, or be nominated by the student, provided that a staff member is prepared to supervise the topic. It is expected that the majority of students will continue with the topic chosen in fourth year in the prerequisite subject.

EE559 Electrical Machine Drives
No. of hours per week: five hours
Prerequisites: EE475 Electrical Power and Machines, EE476 Electronics, EE489 Control Systems, SM494 Engineering Mathematics
Instruction: lectures/laboratory
Assessment: examination/assignments

A final-year subject in the electrical power and control engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To study the latest industrial machine drives from the point of view of steadystate performance, dynamic performance and their interaction with the power system.

**Subject description**
D.C. drives: review of the development of variable speed drives — in particular the Ward Leonard system as a closed loop speed control.
Design of low power variable speed drives using permanent magnet d.c. motors and brushless d.c. motors.
A.C. machine transients: space phasor description of machines. The synchronous machine — winding, transformations, the d.g.y. model. Short circuit analysis. Three phase induction motor, starting and reconnection transients. Fault current contributions.
Machine windings: characteristics and physical layouts. Fractional pitch coils and harmonic suppression. Fractional slot windings. Harmonic content of generated EMF.

**Texts/References**
AS1359. General Requirements for Rotating Electrical Machines. Standards Association of Australia
Leonard, W. Control o f Electrical Drives. Springer Verlag, 1985

EE561 Computer Systems Engineering
No. of hours per week: six hours
Prerequisites: EE465 Engineering Systems Software, EE474 Computer Systems Engineering
Instruction: lectures/practical sessions
Assessment: assignment

A final-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**
To study elements of computer systems engineering covering operating systems, computer architectures and software engineering.

**Subject description**
Unit 1 — Real-time operating systems
Unit 2 — Advanced computer architecture
Unit 3 — Performance modelling of distributed systems

**Texts/References**
IEEE and ACM transactions and magazines
**EE562 Computer Electronics**

No. of hours per week: four hours  
Prerequisites: EE459 Electrical Design  
Instruction: lectures/tutorials/laboratory  
Assessment: examination/laboratory

A final-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**  
To provide a grounding in digital systems design with programmable logic, and CMOS VLSI design at the system level.

**Subject description**  
Digital systems design with programmable logic: algorithmic state machines, map-entered variables method, synthesis of ASM-based designs, ROM, PAL, PLA and synthesis by programmable devices using PLDs and FPGAs.  
CMOS VLSI design: MOS transistor theory, basic CMOS circuit blocks, the CMOS process and layout design rules, circuit characterisation and performance estimation, and system design and design methods.

**Texts/References**  
Green, D. Modern Logic Design. Addison-Wesley, 1986  

**EE563 Advanced Computer Techniques**

No. of hours per week: three hours  
Prerequisites: EE467 Computer Communications  
Instruction: lectures/laboratory  
Assessment: assignment/computer laboratory

A final-year subject in the computer systems engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**  
To introduce advanced computer engineering concepts and techniques in the areas of computer software, hardware and computer applications.

**Subject description**  
Material presented in this subject reflects the current research interests of computer systems engineering lecturers. Students choose three units, examples of which include:  
- parallel computer systems  
- database systems  
- hardware description languages  
- comparative languages  
- image processing  
- compilation techniques  
- digital signal processing architectures

Each unit is allocated one hour per week. Availability of units will depend on student demand and staff.

**Texts/References**  
IEEE and ACM transactions and magazines  
Other references as advised by unit lecturers

**EE576 Electronics**

No. of hours per week: three hours  
Prerequisites: EE476 Electronics  
Instruction: lectures/tutorials/laboratory  
Assessment: examination/laboratory

A final-year subject in the electrical power and control engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**  
To extend the principles learned in earlier years of microcontroller power electronics and opto-electronics, with applications in the power areas.

**Subject description**  
Part A — Microcontrollers  
The application of single chip microcontrollers to electrical engineering, AID and D/A conversion. Data communications and interfacing.  
Part B — Power electronics  

**Texts/References**  
Intel Embedded Controller Handbook 1987 (Santa Clara, CA), Intel Corporations  
Williams, BW. Power Electronics. 2nd ed, New York: John Wiley, 1992  
Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd ed, Wokingham: Addison-Wesley, 1992

**EE597 Electrical Power Systems**

No. of hours per week: five hours  
Prerequisites: EE475 Electrical Power and Machines  
Instruction: lectures/tutorials/laboratory  
Assessment: examination/laboratory

A final-year subject in the electrical power and control engineering stream of the degree of Bachelor of Engineering (Electrical).

**Subject aims**  
To introduce the principles of the major areas of modern electrical power systems engineering, covering stability, protection, circuit interruption and high voltage engineering.

**Subject description**  
Power systems analysis  
Reference


EE598 Digital Systems and Control

No. of hours per week: two hours
Prerequisites: EE489 Control Systems, SM494 Engineering Mathematics
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment

A final-year subject in all streams of the degree of Bachelor of Engineering (Electrical).

Subject aims
To consolidate the work on systems and control in earlier years by introducing sampling and discrete data in feedback systems, the principles of process control and techniques of computer based control including interfacing and data acquisition.

Subject description
Algorithms suitable for compensation using computer based control systems.
State variable feedback and design of continuous and discrete time multivariable control systems to meet a set of specifications.
Advanced topics of adaptive control and optimisation.

Texts/References
Chase, F. Diagram Sets in Process Control and Computer Interfacing, 1989

EE641 Fundamentals of Computing

No. of hours per week: four hours
Prerequisites: satisfactory completion of three year engineering/science degree or equivalent industrial experience
Instruction: lecture/laboratory
Assessment: tests/laboratory exercises

A first-year subject in the Graduate Diploma in Computer Systems Engineering.

Subject aims
To introduce the fundamental concepts of computing, familiarity with PCs and some proficiency in the use of the PASCAL language for constructing solutions to engineering problems.

Subject description
Historical context of computing. Binary numbers. Introduction to computer systems including PCs. DOS operating system. Turbo PASCAL program development environment. Fundamental development of algorithms and structured programming techniques.

Introduction to PASCAL
- syntax diagrams
- control structures
- elementary and user-defined data types
- procedure and functions with value and variable parameters
- identifier scope
- arrays, strings, text files, sets and records.

Elementary input/output interfacing techniques using PASCAL.

References

EE642 Data Structures

No. of hours per week: four hours
Prerequisites: satisfactory completion of a three year engineering/science degree or equivalent industrial experience
Instruction: lecture/tutorials/laboratory
Assessment: tests/laboratory exercises

A first-year subject in the Graduate Diploma in Computer Systems Engineering.

Subject aims
The aim of this subject is to develop a sound understanding of: fundamental data structures and algorithms and their manipulation; single-register and multiple-register architectures and their addressing modes; mapping PASCAL to assembly language and the assembly process; internal representations of data and its manipulation including floating-point and integer arithmetic.

Subject description
Data structures: PASCAL pointer types, lists, stacks, queues, trees directed and undirected graphs and algorithms for the manipulation of these structures, file types and organisations.

Elementary computer organisation using PASCAL as the descriptive language: the Von-Neumann fetch-execute cycle, simple single register architectures, their constraints and evolution to multiple register architectures (immediate, direct, register, register-indirect and indexed addressing modes).

PASCAL to assembly language mappings for a multiple-register architecture. Informal treatment of parser construction from a language’s syntax using assembly language as an example. The assembly process. The fetch, decode and execution process for the multiple-register machine.

Internal representation of data types. Integer and floating-point arithmetic.

References
EE643 Computer Systems Software

Subject aims
The aim of this subject is for students to develop a sound understanding of:
- the basic elements of software engineering;
- the basic concepts underlying operating systems;
- how minimal microprocessor systems are organised;
- the basic considerations of the logical and electrical interconnections of digital devices in microprocessor systems;
- mechanisms for handling asynchronous external exceptions or interrupts;
- the use of high-level languages for input/output intensive applications including selective optimisation at the assembly language level for time critical applications.

Subject description
Introduction to software engineering including, software life-cycle and the design process using appropriate graphical representations (six hours).

Comparison of single-process, multi-process and real-time operating systems introducing such basic concepts as script files, scheduling and resource allocation (four hours).

Brief introduction to the C language building upon familiarity with PASCAL (two hours).

Computer architecture including representative microprocessor architectures and in particular the Motorola M68XXX family architecture; the 
Intel 80XXX architecture will be briefly compared with the Motorola architecture.

Programmer's model (register set, memory structure, addressing model). Instruction set overview (three hours).

Suitability of a machine architecture to support high-level languages (two hours).

Interrupts and asynchronous I/O processing (two hours).

Decoding, memory read/write cycles, timing diagrams and access timing. Peripheral devices. Interrupt hardware (seven hours).

Programming will emphasise the use of high-level languages as a first choice with the techniques for the selective use of machine code for time-critical program regions.

Texts


EE644 Computer Systems Design

Subject aims
To reinforce the programming and software engineering skills and techniques gained in the other graduate diploma subjects.

Subject description
The students will be asked to undertake the design and coding of a significant software task. The students will undertake this work in small groups so as to highlight the need for co-ordination of the design and programming components of the task. The lecturer will provide the initial program specification and give direction to the development of each stage.

EE741 Computer Systems and Software Engineering

Subject aims
The aim of the subject is for students to develop a sound understanding of: advanced software engineering principles and techniques applicable to computer based systems in engineering; the fundamental elements of operating systems as a base for advanced studies in real-time systems.

Subject description
Principles of software engineering including requirement analysis, specification, design, verification and quality assurance.

Operating systems including the internal structure and operation of the UNIX operating system using MINIX as a case study.

Texts


References
IEEE Software Magazines


EE742  **Computer Communications**  
No. of hours per week: four hours  
Prerequisites: satisfactory completion of the first year of the Graduate Diploma in Computer Systems Engineering or a four year degree in engineering/science  
Instruction: lecture/laboratory  
Assessment: laboratory/tutorial exercises/housework  

A second-year subject in the Graduate Diploma in Computer Systems Engineering.  

**Subject aims**  
To introduce students to the basic concepts and techniques of data communications, computer networks and layered protocols.  

**Subject description**  
Review of basic concepts used in data communications: modulation, multiplexing, codecs and modems.  
Data transmission: media, waveforms, impairments, intersymbol interference.  
Coding and framing: PCM, source coding, synchronous and asynchronous transmission, error checking and control, interfaces, computer transmission.  
Overview of data switching: circuit switching, message switching, packet switching, event timing, network control routing, flow control.  
Networks: topologies, point-to-point networks, switched exchanges, packet switched services.  
Protocols: layering, ISO standard, communication layers, LAN protocols, IEEE802, transport layer, application layer.  
Overview of integration of digital services: ISDN, electronic messaging, MAP.  

**References**  

EE744  **Design and Project**  
No. of hours per week: four hours  
Prerequisites: satisfactory completion of the first year of the Graduate Diploma in Computer Systems Engineering or a four year degree in engineering/science  
Instruction: supervision of project/seminars  
Assessment: minor thesis/seminars  

A second-year subject in the Graduate Diploma in Computer Systems Engineering.  

**Subject aims**  
After completing this unit the student should be able to implement and document a computer system design.  

**Subject description**  
The student may choose any appropriate computer systems engineering design project, subject to the subject convenors approval. Work related projects are encouraged. The project may include both hardware and software components.  
The student will have a nominated supervisor who approves the initial project specification and gives advice on the approach and method being used. The student is responsible for setting attainable targets and deadlines and achieving them.  
The student will be required to present his project results in a seminar.  

EE745  **High Performance Computer Architectures**  
No. of hours per week: four hours  
Prerequisites: satisfactory completion of the first year of the Graduate Diploma in Computer Systems Engineering or a four year degree in engineering/science  
Instruction: lecture/laboratory  
Assessment: laboratory/tutorial exercises/housework  

A second-year subject in the Graduate Diploma in Computer Systems Engineering.  

**Subject aims**  
The aim of the subject is for students to develop a sound understanding of the available computer architectures and their application areas.  

**Subject description**  
The topics to be covered in this subject are:  
- historical perspective  
- taxonomy  
- MIMD architectures  
- SIMD architectures  
- pipelining techniques  
- memory organisation  
- communication networks  

**References**  
ACM Transactions on Computer Architecture  
IEEE Transactions on Parallel and Distributed Systems  
Manufacturer's Programming Manuals  

EE746  **Parallel Programming Techniques**  
No. of hours per week: four hours  
Prerequisites: satisfactory completion of the first year of the Graduate Diploma in Computer Systems Engineering or a four year degree in engineering/science  
Instruction: lecture/video presentations/laboratory  
Assessment: laboratory exercises and assignments/housework  

A second-year subject in the Graduate Diploma in Computer Systems Engineering.  

**Subject aims**  
The aim of the subject is for students to develop a sound understanding of the parallel computing and its application to diverse areas.  

**Subject description**  
The topics to be covered in this subject are:  
- implicit and explicit parallel programming  
- vectorisation  
- parallel decomposition
• memory allocation
• communications/computation tradeoffs
• optimising for pipelined scalar processors
• visualisation tools and debugging techniques

References
ACM Transactions on Computer Architecture
IEEE Transactions on Parallel and Distributed Systems
Manufacturer’s Programming Manuals

EE747 Discrete Time Control Systems
No. of hours per week: four hours
Prerequisites: satisfactory completion of the first year of the graduate diploma course in computer systems engineering or a four year degree in engineering/science
Instruction: lecture/tutorials/laboratory
Assessment: laboratory exercises/assignments/tests

A second-year subject in the Graduate Diploma in Computer Systems Engineering.

Subject aims
The aim of the subject is to reinforce the fundamental principles of closed loop control systems and to introduce the concept of discrete time control. To develop time and frequency domain techniques for the analysis of continuous and discrete time systems and to study the criteria for stability.

Subject description
System modelling:
Derivation of a differential equation to describe the dynamic behaviour of a continuous time electromechanical system. The use of transfer function techniques and state variable techniques to analyse the performance of a system.
Derivation of a difference equation to describe the behaviour of a discrete time system and the use of Z-transforms and state variable techniques as analysis tools.
Closed loop control:
The use of frequency domain and root locus techniques to study the performance of a closed loop control system. Stability criteria and steady state error analysis using the above analysis tools.
The use of similar techniques for the analysis of discrete time control systems. The effect of sampling rate on the transient response and stability of a discrete time control system.

Textbook
Dorf, R.C., Modern Control Systems. 6th ed, Addison Wesley, 1992
Ogata, K. Modern Control Engineering. 2nd ed, Prentice Hall, 1992

EE748 Computer Control of Dynamic Systems
No. of hours per week: four hours
Prerequisites: satisfactory completion of the first year of the graduate diploma course in computer systems engineering or a four year degree in engineering/science
Instruction: lecture/tutorials/laboratory
Assessment: laboratory exercises/assignments/tests

A second-year subject in the Graduate Diploma in Computer Systems Engineering.

Subject aims
To review the design techniques used to design a closed loop control system to meet a set of specifications. To extend the design techniques to discrete time control systems and to develop computer algorithms to emulate real time compensators and filters.

Subject description
Specification of performances from a time domain and frequency domain point of view. Steady state error and parameter sensitivity. Classical and state space techniques for designing lead, lag and PID controllers or feedback compensators, including low pass filters for reduction of the noise content of signals.
The above techniques applied to a discrete time control system. Software compensator; to perform the PID task and to behave as a low pass filter.
Modern application of digital control of an induction motor driven by a variable frequency inverter.

References
Dorf, R.C., Modern Control Systems. 6th ed, Addison Wesley, 1992
Ogata, K. Modern Control Engineering. 2nd ed, Prentice Hall, 1992

EE749 Communication Networks
No. of hours per week: four hours
Prerequisites: satisfactory completion of the first year of the graduate diploma course in computer systems engineering or a four year degree in engineering/science
Instruction: lecture/tutorials/laboratory
Assessment: laboratory exercises/assignments/tests

A second-year subject in the Graduate Diploma in Computer Systems Engineering.

Subject aims
The aim of this subject is for students to develop a sound understanding of:
the basic nature of traffic in voice, data and integrated services networks;
performance parameters used in network design; issues involved in realising required system performances; resource management and optimal use of resources; mixed traffic types and their effect on resources; the influence of integrated services on computer and communications networks.

Subject description
Teletraffic engineering: the nature of traffic and its demand for network resources.
Network topological structures.
Routing and flow control in circuit switched networks.
Message switched networks.
Routing and flow control in packet switched networks.
Token ring protocols.
Random access protocols.
Integrated voice, data and video networks.
Network management and optimal use of resources.
Mobile communications networks overview. Propagation, static and dynamic channel assignment, traffic control.
Mobility issues in integrated services networks. Intelligent network services overview.

References

de Prycker, Martin. Asynchronous Transfer Mode — Solution for Broadband ISDN. Ellis Horwood Ltd., 1991

This list of books will be complemented by reference to specialist research papers.

EF190 Professional Studies
No. of hours per week: two hours for first semester and one hour for second semester

A first-year subject for all degree courses in engineering which provides an introduction to the communication skills required by professional engineers.

Subject aims and description
This subject aims to develop the following skills during the investigation of major projects in the areas of management and learning and engineers and the environment:
- role of communications in investigating problems and implementing solutions;
- information gathering and research skills;
- learning and problem solving skills;
- teamwork and negotiation skills;
- effective presentation of technical material to demonstrate an understanding of social and environmental issues;
- critical analysis of data provided by technical and lobby groups.

References
EF190 — Communications Project Book.
EF190 — Professional Studies Student Guide

EF611 Management Fundamentals
No. of hours per week: four hours

A first year compulsory subject in the Graduate Diploma in Management.

Subject aims and description
An introductory study of industrial development and the growth of managerial functions leading to an understanding of the complexities of managing an enterprise in the business world of today. The importance of innovation and entrepreneurship is stressed.

As with other core subjects within the course, the study will integrate key elements — financial, human and organisational — of management.

It includes a general introduction to management theories, to fundamentals of finance, to human and organisational aspects of management and to fundamental legal concepts of organisation.

References
Gaffikin, M. Principles of Accounting. 3rd ed. HBJ, 1993

EF612 Engineering Management
No. of hours per week: two hours for two semesters

A first year elective subject in the Graduate Diploma in Management.

Subject aims and description
Management is a key element in all areas of engineering. This unit is directed at the elements of management as they particularly relate to project, site and plant management. As with other subjects within the course, the key elements of management — financial, human and organisational and legal — will be integrated.

An introductory subject addressing core areas of engineering management with focus on project, life cycle and plant management. Considerations include: project initiation, implementation and termination, financial and legal requirements, life cycle costing, plant procurement, operation, reliability maintenance, update and disposal.
Elements of particular significance to projects will include initiation of projects, feasibility studies, tendering procedures, estimating, CPM, cost control, construction documentation, building and planning permits, claims, partial and final certification.

Plant management aspects will include plant procurement, operation, reliability, maintenance, updating and disposal of equipment.

Planning law, Acts and legislation relevant to major projects will be included.

**Textbooks**

**Reference**

**EF613  Industrial Engineering**
No. of hours per week: two hours for two semesters

A first year elective subject in the Graduate Diploma in Management.

**Subject aims and description**
An introductory subject addressing the elements of industrial engineering, production and manufacturing management. Techniques addressing various issues including: financial analysis, inventory management, quality, scheduling and quality management are considered and computer software used in related case studies. Modern approaches to management such as MRPII, JIT, TQM and techniques for method study, productivity improvement, plant layout and network analysis, etc, are discussed. Heavy class participation and computer interaction is required.

**Textbooks**

**EF614  Management Practice**
No. of hours per week: four hours

A first year compulsory subject in the Graduate Diploma in Management.

**Subject aims and description**
Business strategy component will cover setting objectives, strategic planning and measurement of performance. Innovation and entrepreneurship are emphasised. Human aspects will consider financial analysis and reporting. Legal aspects will concentrate on contract, tort and trade practices legislation. Manufacturing aspects will deal with quality and inventory management.

**Textbooks**

**EF620  Human Aspects**
No. of hours per week: two hours

A compulsory subject in the Graduate Diploma in Management.

**Subject aims and description**
This subject is designed to build upon the work of the introductory work in the first semester and treat the material with more depth and practicality. Topics covered are listed below.

Theoretical base: interpersonal relationship and individual development; individual differences, personality theory, value and value systems, group dynamics, role theory, leadership intergroup competition. **interpersonal** communication, perception, thinking processes and memory. Business politics. Human resources management: recruitment, selection and training. Aptitude testing. Management development and personnel appraisal systems. Wage and salary structures, benefits and financial reward schemes. Performance factors: motivation, job satisfaction, morale, management of conflict, organisation structures and their effects on behaviour, effecting change in the organisation. Industrial relations: practical industrial relations for supervisors and managers.

**EF621  Financial and Legal Aspects**
No. of hours per week: three hours

A compulsory subject in the Graduate Diploma in Management.

**Subject aims and description**
This subject is designed to build upon the work of the introductory group. Topics include: financial accounting; management accounting and reporting; company taxation; financial statement analysis; business organisations; sources of finance; capital and cash flow; insurance and negotiable instruments.

**Textbook**
Latimer, P. Australian Business Law North Ryde, N.S.W.: CCH Aust., 1993

**EF622  Engineering Management**
No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

**Subject aims and description**
This subject addresses wider issues associated with effective engineering management. Considerations include: legal issues (trends, obligations, professional liability and protection of property), executive interfaces, engineering business units, management of systems effectiveness, management strategies (capability acquisition and procurement, integrated logistic support, maintenance, performance measurement).

**Textbooks**

**EF623  Marketing**
No. of hours per week: three hours

A compulsory subject in the Graduate Diploma in Management.

**Subject aims and description**
This subject addresses the skills necessary to evaluate the broad marketing needs and vulnerabilities of private and public sector enterprises. Emphasis is on establishing a thorough grounding in marketing principles and the application of these principles to practical marketing situations. An outcome of this subject is the development of a detailed marketing plan to improve performance and profitability.

**Textbook**
Hindle, K.G. What is a Marketing Case Study and How do you Solve it. Swinburne Press, 1991
Subject aims and description

This subject is designed to draw together the topics covered in the other subjects of the Graduate Diploma in Management with an industrial emphasis and provide additional material to enable the student to develop an understanding of the process of management in business organisations.

Particular emphasis is placed on recognising the combinations of internal and external circumstances that create a business opportunity; analysing the risk attached to grasping opportunities; developing the people and business skills needed to launch a successful commercial venture based on technology products or services; practising sound management skills and techniques in converting opportunities to reality; practising sound management skills and techniques to control the resources available to grow the business or organisation; recognising, discussing and selecting from a broad range of business strategy development methodologies; preparing a commercial business plan; describing and assisting the implementation of appropriate systems and controls to manage a new or growing company or other organisation.

Textbooks


EF625 Computing — Business Applications and Systems

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description

The subject addresses management applications of, and the management of, computing. It will include financial packages for budgeting and management accounting; administrative applications; database management and applications; office automation: spreadsheets, word and document processing, desk top publishing, graphics and presentation packages. Electronic office: networks, electronic mail, facsimile, telex, etc.

Decision support packages — mathematical tools relevant to management and some packages relevant to the manufacturing process will be considered.

EF626 Computing — Engineering Applications and Systems

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description

The subject seeks to extend the student's knowledge of engineering orientated applications packages, their management, and their management applications. It also aims to extend the student's programming skills.

In particular it addresses: high level languages, data structures and applications, project engineering and maintenance packages, design with computers, systems simulation with computers.

EF629 Sales Management

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description


EF630 Manufacturing Management

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description

This subject reviews integrated manufacturing systems and the manufacturing management function: production, production planning and control, maintenance, quality control, etc.

The relationship between manufacturing and other organisational functions in the company and the application of analytical techniques relevant to production and related functions such as market forecasting, scheduling, materials requirement planning will be covered.

The 5P’s of Japanese manufacturing technique, VAM, world class manufacturing, JIT production system and theory Z.

References


EF631 Physical Distribution Management

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description

Topics relating to the design and management of the physical distribution of products from the point of manufacture to the point of sale. Organisation of the physical distribution function, warehousing and storage systems, transportation. Financial, human and organisational management aspects are covered.

EF632 Corporate Communications

No. of hours per week: two hours

An elective subject in the Graduate Diploma in Management.

Subject aims and description

An examination of an organisation's communications needs and development of cost-effective strategies to meet those needs. This includes a communications audit, and choice of an appropriate mix of communications media to minimise the
cost of communications within the organisation and externally. Both private and public networks will be considered.

**EF633 Energy Management**
No. of hours per week: two hours
An elective subject in the Graduate Diploma in Management.

**Subject aims and description**
An assessment of an organisation's energy requirements and development of systems and operational techniques to meet those requirements at minimum cost. Energy source selection and life cycle costing, system optimisation. The study includes techniques for monitoring energy usage in buildings and larger sites and for developing optimal use strategies.

**EF634 Civil Engineering Management**
No. of hours per week: two hours
An elective subject in the Graduate Diploma in Management.

**Subject aims and description**
Functions of management: responsibilities of project manager and site engineer; objective, strategies and plans; leadership; controlling performance, personnel and material; organisational culture information systems.

**EF635 Construction Technology**
No. of hours per week: two hours
An elective subject in the Graduate Diploma in Management.

**Subject aims and description**
The subject considers the management of technological resources available in the execution of a construction project. Planning of construction programs: hazards, local factors, works layout, process dissection, construction program, plant schedule, critical path analysis, detailed planning, estimate summary. Plant and equipment, characteristics of the site and construction methodologies, and the physical and human resources are considered. Resource allocation: assignment of plant and equipment to tasks; allocation of labour to job; estimating likely outputs; smoothing resource allocation; establishing plant and equipment spread.

**EF641 Management Practice**
No. of hours per week: six hours
A compulsory subject in the Graduate Diploma in Management for full time students only.

**Subject aims and description**
This subject is designed to draw together the topics covered in the other subjects of the Graduate Diploma in Management with an industrial emphasis and provide additional material to enable the student to develop an understanding of the process of management in business organisations. Particular emphasis is placed on recognising the combinations of internal and external circumstances that create a business opportunity; analysing the risk attached to grasping opportunities; developing the people and business skills needed to launch a successful commercial venture based on technology products or services; practicing sound management skills and techniques in converting opportunities to reality; practicing sound management skills and techniques to control the resources available to grow the business or organisation; recognising, discussing and selecting from a broad range of business strategy development methodologies; preparing a commercial business plan; describing and assisting the implementation of appropriate systems and controls to manage a new or growing company or other organisation.

**Textbooks**

**EF711 ‘Product’ Development and Life Cycles**
Block delivery for three x two days (Fridays and Saturdays); one block per month
A subject in the Graduate Diploma in Entrepreneurship and Innovation.

**Subject aims and description**
This unit aims to provide the student with the ability to: identify and sustain a competitive advantage, utilise and manage process and product innovation, manage and overcome customer and corporate barriers to innovation, and appreciate the international market place, by choosing appropriate strategies.

**Textbook**

**EF712 Opportunity and Feasibility Analysis**
Block delivery for three x two days (Fridays and Saturdays); one block per month
A subject in the Graduate Diploma in Entrepreneurship and Innovation.

**Subject aims and description**
This unit aims to provide the student with the ability to: recognise the difference between an idea and an opportunity, identify where opportunities exist, and examine in depth its attractiveness to create or ‘grow’ a business. A screening guide will be used to assess the product or service in terms of market place potential, financial returns and the opportunities for further business development.

**Textbooks**

**EF713 The Entrepreneurial Organisation**
No. of hours per week: three hours
A subject in the first year Graduate Diploma in Entrepreneurship and Innovation and can also be taken as an elective in the Graduate Diploma of Management.

**Subject aims and description**
This course focuses on the entrepreneurial team and the human dimensions of creating and developing new ventures. The principles and theories of organisational behaviour are
presented and applied to specific cases (Australian and international). People are major resources for the entrepreneur and the skills involved in managing them through appropriate communication, leadership and decision making are at the heart of entrepreneurial activity.

The emphasis is on creating a solid theoretical base for the human resource management skills required by entrepreneurs as they create and develop a new venture.

**Textbooks**


**EF715 Accounting For New Ventures**

No. of hours per week: three hours

A subject in the first year Graduate Diploma in Entrepreneurship and Innovation and first year Master of Enterprise Innovation.

**Subject aims and description**

This course provides students with an understanding of the accounting requirements involved in the establishment and continuity of a business in a high growth market. It equips students with demonstrable mastery of the basic principles of accounting and double entry bookkeeping and the ability to apply these principles to complete a set of accounts from basic journal entries through to the production of accurate profit and loss statements, balance sheets and funds statements.

Students also learn some important distinctions. There are vital differences between: accounting for merchandising and manufacturing entities; partnership and company accounting; external and internal reporting.

Finally, students acquire a basic understanding of cost and management accounting and the ability to meet the needs of growing businesses by providing different forms of accounting reports sensitive to management needs.

**Textbook**


**EF810G Marketing for Innovation**

Forty-two hours over two x three-day block modules (seven hours per day)

A subject in the Graduate Certificate in Enterprise Management.

**Subject aims and description**

This subject provides students with the skills necessary to evaluate the broad marketing needs and vulnerabilities of an existing enterprise or new venture by applying a sound knowledge of fundamental marketing theory in accordance with a comprehensive method for solving practical marketing problems.

Topics include: the marketing concept, market segmentation and targeting, consumer behaviour, the marketing mix, product life cycle theory and practice, and principles of marketing research. A feature of this subject is the mixture of theoretical case work with real world assignments.

**Textbook**


**EF811G Financial Planning for Innovation**

Forty-two hours over two x three-day block modules (seven hours per day)

A subject in the Graduate Certificate in Enterprise Management.

**Subject aims and description**

This subject equips students with the ability to apply, in their own workplace, a sound knowledge of those aspects of fundamental financial theory which are most germane to practical cash flow forecasting and management — particularly with regard to the introduction of an innovation.
It concentrates on three main topic areas in an endeavour to produce one main outcome. Topic 1: understanding and using financial mathematics and discounted cashflow analysis in selected applications. Topic 2: perceiving the accounting framework as both a general management information system and a specific financial information system. Topic 3: understanding selected principles of financial planning. Outcome: application of the three skills to analysis and forecasting through financial modelling using electronic spreadsheets.

Textbook


EF812 Entrepreneurship, Law and Ethics

No. of hours per week: three hours

Subject

A subject in the first year of the Graduate Diploma in Entrepreneurship and Innovation.

Subject aims and description

In forming a new venture, the entrepreneur has in general three choices of legal structure: the enterprise can run as a sole proprietorship, as a partnership or as a corporation. The law also affects the steps involved in bringing an invention, original product or process from the stage of conception to that of full commercial utilisation. This unit aims to provide the student with the ability to analyse these issues, together with the ethical issues involved in the decisions, and in particular any ethical implications.

EF813G Organising for Innovation

Forty-two hours over two x three-day block modules (seven hours per day)

A subject in the Graduate Certificate in Enterprise Management.

Subject aims and description

This subject equips students with the skills and acumen necessary to evaluate, plan and manage the organisational requirements for introducing an innovation into the system and culture of an existing organisation. The subject combines both theory and OB principles and application of them. Topics include: history and evolution of OB theory and practice, development of an OB model, understanding and managing individuals, groups and organisational structures and processes, strategic management, the marketing-OB relationship and OB’s future.

Textbook


EF814G Strategy and Business Planning

Forthy-two hours over two x three-day block modules (seven hours per day)

A subject in the Graduate Certificate in Enterprise Management.

Subject aims and description

This subject equips students with the ability to apply, in their own workplace, a sound knowledge of corporate strategy and business planning. The core of the subject is the ability to apply strategic concepts in a comprehensive cash flow focused business plan which integrates the knowledge gained in the marketing, OB and financial planning courses. Topics include: introduction to corporate entrepreneurship, the elements of strategic analysis, strategy and organisational behaviour, the power of "adhocracy", and the elements of the business plan.

EF820G Planning of Training Programs

Thirty-six hours over two x two-day block modules (eight hours per day)

A subject in the Graduate Certificate in Training Management.

Subject aims and description

Course participants are provided with the necessary knowledge, skills and resources for planning training programs in their own specific organisation. The prime focus of this unit is to enable the student to apply the diverse generic theories and principles of program planning to their discrete organizational needs in an innovative, systematic management style.

Topics include: the planning cycle, training needs analysis, skills auditing, assessing training solutions, structuring of planning, human resource development, strategic planning, organisational theory of behaviour, professional development.

Textbooks


EF821G Program Design

Thirty-six hours over two x two-day block modules (eight hours per day)

A subject in the Graduate Certificate in Training Management.

Subject aims and description

Course participants are provided with the appropriate knowledge, skills and resources to design structured training programs with specific behavioural and quantitative outcomes.
The prime focus of this subject is to enable students to apply the generic theory of training program design to their own organizational environment in an innovative and systematic manner.

Topics include: writing course aims and objectives, presentation of design specifications, delivery of training program designs, ordering and structuring course content, the principles of specificity, modes of delivery, principles of adult learning, development of materials and manuals, learning contracts, professional development.

Textbooks


**EF920 Managing the Growing Business**

No. of hours: fifty-six hours

A subject in the Master of Enterprise Innovation.

**Subject aims and description**

The focus of study in this unit is the growth pattern or business cycle that seems to characterise small businesses, both as independent entities or as part of a corporation, in their development. The principles and theories of organisational behaviour are introduced and their relevance to management of the growing business is examined. A model of business growth is explored and the means by which even large companies can maintain their growth and impetus are discussed. Case studies (many Australian) which illustrate the preservation and perseverance of growth stages are examined.

Textbooks


Davie, R.S. and Stamm, W.J. Australian Case Studies. 1990

References


EE923 Growth Venture Evaluation

No. of hours: fifty-six hours

A subject in the Master of Enterprise Innovation.

**Subject aims and description**

This is a case and research based course which provides students with the ability to apply the skills acquired in EF811 to analysis and decision making in vital areas of financing and evaluating entrepreneurial ventures characterised by the stresses of high growth rates. Topics include:

- evaluating opportunities: business plans; franchising;
- seeking, assessing and acquiring resources: searching for financial resources, valuing existing business; leveraging buyout: legal forms of organisation; budding, partners; securities, law and private financing; share market options; venture capital;
- managing and harvesting the venture: initial public offering; partner-investor relations; takeovers: bankruptcy.

Textbook


References

Dave, R.S. and Stamm, W.J. Australian Case Studies. 1990


**EF924 Advanced Business Plan**

No. of hours: fifty-six hours over two semesters

A subject in the Master of Enterprise Innovation.

**Subject aims and description**

This course requires students, in supervised teams, to write their second business plan. They draw on the experience of their first effort in the EF814 course and the growing
sophistication in entrepreneurial management acquired in both second year Masters courses. They produce a business plan of a calibre high enough to meet the due diligence standards of an investment analyst operating in an internationally established venture capital company.

**EF931 Entrepreneurship in Corporations**

No. of hours: fifty-six hours

A subject in the Master of Enterprise Innovation.

Subject aims and description

This unit aims to provide the student with the ability to: identify the strategy concept and organisation concept of corporation; recognise the relevance of these concepts to the contexts of entrepreneurship, maturity, diversification, innovation and professionalism; recognise how entrepreneurial management differs from 'professional' management; understand the importance of culture in an organisation and its effect on venture opportunities; design new ventures to optimise the odds for success in a corporate framework.

**Textbooks**


**EF933 Integrated Innovation Management**

No. of hours: fifty-six hours

A subject in the Master of Enterprise Innovation.

Subject aims and description

This course builds on previous courses covering the principles of the innovation process, marketing, accounting and leadership, the forces and ground rules that operate in large organisations that seek to innovate and the various analytic tools that need to be used in business in general and innovation in particular.

It explores the holistic application of these principles to real-life challenges, particularly in the early stages of the innovation process, to better equip students to:

- listen and look for innovative challenges;
- develop their F5 brain abilities of intuition, the subconscious and lateral thinking;
- apply both sides of the brain to the realisation of the challenge, regardless of the resources presently available;
- understand the roles played by leadership, learning, luck and positive thinking in the innovative process;
- understanding their own strengths and weaknesses as potential innovators;
- become acquainted with the government-controlled factors which influence innovation and the latest state of play in government understanding and assistance to the innovative process.

Overall, this course prepares students to greet life's challenges with a new coherent and pragmatic approach based upon self-knowledge.

**References**


**EF934 Entrepreneurial Research Project**

No. of hours: fifty-six hours over two semesters

A subject in the Master of Enterprise Innovation.

Subject aims and description

Students who have passed this subject should possess:

- demonstrable mastery of fundamental quantitative and qualitative methods of social research;
- an understanding of the relationship between generic social research methodology and its application to research in the specific field of entrepreneurship;
- the ability to apply acquired research skills to the writing of a masters degree standard 'mini thesis' which advances the existing state of knowledge of a selected aspect of the Australian entrepreneurial environment and thus becomes a worthy addition to the Entrepreneurial Research (ER) literature.


**ME621 Air-conditioning**

No. of hours per week: four hours for two semesters

A subject in the Graduate Diploma in Air-conditioning.

**Subject aims and description**


Boilers and heat generation: revise fundamentals, package boiler units, flue-gas analysis, regulations regarding boilers and atmospheric pollution.
ME622 **Refrigeration**

No. of hours per week: three hours for two semesters

A subject in the Graduate Diploma in Air-conditioning.

**Subject aims and description**


The chlorine-ozone reaction.

Positive displacement compressors. Descriptive treatment of construction of rotary vane, screw and reciprocating compressors. Classification according to duty.

Reciprocating compressor clearance and actual volumetric efficiency. Volumetric and isentropic efficiencies of all types.

Effect of internal leakage on discharge temperature and efficiency.

Lubrication. Viscosity. Oil trapping and return methods.

Crankcase heaters.

Multipressure systems. Flash intercoolers, staged compression and multiple evaporators. Regenerative cycles.

Evaporators and condensers. Types and applications. Heat transfer in finned coils and shell and tube exchanges.


Plant operation. Air purging, charging, pump-down and defrosting.


Absorption cycle. Properties of binary mixtures. Analysis of component operation and characteristics of the system.

**References**

American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks — Fundamentals, Systems, Applications and Equipment Volumes. Atlanta, GA, USA: Published by this Society.


ME722 **Refrigeration**

No. of hours per week: three hours

A subject in the Graduate Diploma in Air-conditioning.

**Subject aims and description**

Vapour compression cycle.

Centrifugal compressors. Isentropic and actual operation. Pressure coefficient and isentropic efficiency. Dimensionless speed, flow and power.

Stability limit. Impeller proportions.

Condenser characteristics. Cooling capacity as a function of evaporating and condensing temperature, cooling fluid flow rate and entry temperature. Condensing unit characteristics.

Evaporator characteristics. Cooling capacity as a function of evaporating and condensing temperatures, cooled fluid flow rate and entry temperature and the refrigerant suction condition.

System performance. Effect on performance of changing one or more variables. Evaporator starving, heat exchanger fouling.

System operation with restrictor tubes.

Capacity control applied to all types of compressors, Hot gas by-pass.

Analysis of thermal storage and storage mediums.

Time dependent considerations. Heat sources and sinks.


Some aspects of solar boosted and driven heat pumps.

**References**

American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks — Fundamentals, Systems, Applications and Equipment Volumes. Atlanta, GA, USA: Published by this Society.


**Subject aims and description**

Fluid flow principles: air flow in ducts, water flow in pipes, distribution systems, duct design philosophies, equal friction, constant velocity, static regain, index runs, system characteristics, distribution and mixing of air streams, registers and diffusers, pipe design, system characteristics and components, cooling and heating coil connections, control valves.

Fans and pumps: types, characteristics, construction, system matching, energy consumption, part-load fan operation.

Noise and vibration: background theory, NR curves, noise and vibration sources, effect of duct and pipe velocities, sound attenuators in lined and unlined ductwork, sound attenuators, vibration isolation of rotating equipment.

Air conditioning systems: reheat, perimeter induction, variable volume, dual-duct, multi-zone and others, e.g. ice storage systems, typical layouts, advantages and disadvantages, capital and running costs, commissioning, balancing of air and water systems, measurement methods.

Health and safety aspects, smoke and fire control, AS1668 Pt 1, open cooling towers and alternatives, Legionnaire's Disease, water treatment, fresh air intakes, dusts and air contaminants.
ME729 Fluid Mechanics
No. of hours per week: three hours
Assessment: practical work and examinations

A subject in the Graduate Diploma in Chemical Engineering.

**Subject aims and description**

To provide a knowledge of fluid mechanics adequate for the graduate entering the process industry.

Kinematic and potential energy, the equivalence of pressure and head. Bernoulli equation and its application to Pitot tube, orifice plate and Venturi, and weir plates.

Momentum and the momentum equation. Viscosity, its measurement and use. Criteria of similarity: dimensional analysis and its application to the derivation of the **Stanton** (Moody) chart. Equivalent length and diameter. **Stanton** and von Karman charts. The **Hagen-Poiseuille** equation.

Operation and characteristics of centrifugal pumps and fans; means of output control. The virtual head equation, the dimensionless groups relating pump head, throughput, power consumption and efficiency with impeller diameter and speed. Specific speed; cavitation and NPSH. Relationships between frictional head loss in **pipework** and head development of pump or fan.

Application of the above concepts to the solution of problems.

Positive displacement pumps and blowers; valves — gate, globe, diaphragm, pinch, ball etc.

**Textbook**


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ME731 Instrumentation and System Control
No. of hours per week: three hours

A subject in the Graduate Diploma in Air-conditioning.

**Subject aims and description**

General concepts. **Overview** of instrumentation in monitoring, control and experimental analysis.

Functional concepts. Functional elements of instruments and system control loops.


Interrelation of plant and control systems, and interpretation of schematic control drawings.

Control devices and controllers. Broad understanding of pneumatic, electric and electronic control systems, relative merits, overview of controller types and a practical understanding of system control.

DDC, building automation and monitoring.

System studies. Linking of the above elements into control systems for air-conditioning, refrigeration and heating and fire services.

Application of control systems within overall energy, management strategies — link with ME781.

**References**


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ME774 Maintenance Practices and Technology
No. of hours per week: two hours for two semesters

A subject in the Graduate Diploma in Maintenance Engineering.

**Subject aims and description**

Diagnostic and analytical methods with applications to plant and equipment, for condition and system performance monitoring.

Vibration and noise: measurement methods, analysis techniques, troubleshooting and correction.

Oil analysis methods: interpretation of atomic absorption spectrographic methods, development of inspection and trend analysis techniques.

Wear debris: methods of determination and interpretation, ferrography.

Thermography: monitoring devices, interpretation and malfunction through temperature measurements.

**Application** of diagnostic methods to machine health monitoring, setting up inspection procedures, record keeping, trend monitoring, life curves.

**References**


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ME776 Maintenance Engineering Science
No. of hours per week: three hours

Assessment: assignment

A subject in the Graduate Diploma in Maintenance Engineering.

**Subject aims and description**


**References**


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ME777 Maintenance Management
No. of hours per week: two hours for two semesters

Assessment: assignment

A subject in the Graduate Diploma in Maintenance Engineering.

**Subject aims and description**

Strategies for systems operations and support. Maintenance strategies: emergency, corrective, preventative, RAM-D engineering, fundamentals, concepts and applications.

Maintenance operations: selection of maintenance strategies based on management decisions, maintenance planning, work planning, resource analysis and allocation, plant inventory, maintenance control, plant records.

Stores and spares inventory: scientific inventory control, inventory analysis and strategies, stores and spares management policy assessments.

Work measurement in maintenance: method study, work...
improvement, work sampling in maintenance, Just-in-time programs.

Information management: technical and management database assessment and management (search, retrieval, assessment and consolidation).

Computer applications: software for maintenance, evaluation of commercial packages.

**References**


**ME781 Project and Energy Management**

No. of hours per week: four hours

Instruction: lecture (twenty hours); project (forty hours)

Assessment: staff consultation and comprehensive written report

A subject in the Graduate Diploma in Air-conditioning,

**Subject aims and description**

Project management: contract law, scheduling, costing, optimisation, maintenance program development.

Energy management: including energy source selection, energy management, life cycle costing, system optimisation, basics of contracting and project management, and current state of the art applications where applicable.

Field project: the project should be of a practical nature linking the course elements of air-conditioning, refrigeration and system control and involve the application of project and energy management techniques. Where practicable the project should be undertaken by groups and group size should not exceed four.

**References**


**MF120 Navigation and Meteorology 1**

No. of hours per week: three hours for two semesters

A first-year subject in the degree of Bachelor of Technology (Aviation).

**Subject aims**

This subject is designed to give students an extensive understanding of the dynamic atmosphere and its importance to flight operations. Students will gain knowledge and skills required to assess meteorological information and undertake practical navigation up to the level of Commercial Pilot Licence.

**Subject description**

Navigation to CPL:

- Navigation fundamentals, pilot navigation, radio navigation aids.
- Meteorology to CPL:
  - Introduction to meteorology, climatology.

**References**

CAA Aeronautical Information Publication, Civil Aviation Authority

CAA Civil Aviation Orders. Civil Aviation Authority


**MF131 Aircraft General Knowledge 1**

No. of hours per week: two hours

A first-year subject in the degree of Bachelor of Technology (Aviation).

**Subject aims**

This course is designed to provide students with a knowledge of aeronautics and aerodynamics sufficient to form a firm foundation for practical application in flight operations up to the level of Private Pilot Licence.

**Subject description**

Aircraft general knowledge to PPL

Aerodynamics to PPL

Aerodynamic principles of flight, flight controls, steady flight manoeuvres.

**References**


MF150  Occupational Health and Safety
No. of hours per week: two hours for two semesters

A first-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to acquaint students with the occupational health and safety requirements of modern aviation.

Subject description
Safety hazards, combustion, handling of dangerous goods, accident prevention, aviation medicine, survival skills.

References
Merritt, A. A Guidebook to Australian Occupational Health and Safety Laws. 2nd ed, North Ryde, N.S.W.: CCH Australia, 1986

MF160  Propulsion and Aircraft Systems
No. of hours per week: three hours for two semesters

A first-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with a knowledge of the operation of the principles behind the propulsion and aircraft systems up to the level of Private Pilot Licence.

Subject description
Thermodynamics, internal combustion engines, structures, mechanisms and linkages, electro-mechanical systems, motors and generators.

References

MF170  Aviation Mathematics and Computing
No. of hours per week: four hours for two semesters

A first-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to introduce students to mathematical principles as they relate to aircraft systems and aerodynamics.

Subject description
Applied mathematics, calculus, general computer skills, high level language programming, programming applications, data transfer.

References
Bishop, J. and Bishop, N. Pascal Precisely for Engineers and Scientists. Addison-Wesley, 1992
Mathematics Measurements and Units. Canberra: AGPS, 1978

MF180  Aviation Electronics
No. of hours per week: two hours

A first-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to develop in students the thorough understanding of basic electronics relevant to the aviation industry.

Subject description
Electrical circuit analysis, energy transfer and utilisation, transformers.

References

MF190  Communication Skills
No. of hour; per week: three hours

A first-year subject in the degree of Bachelor of Technology (Aviation).

This subject is designed to develop in students the basic techniques and skills in research and written and oral communication relevant to aviation industry.

Subject description
Private study and group interaction management, written and graphic communication, reading for research, group presentations.

References
Donnelly, A. How to Persuade People Through Successful Communication and Negotiation, 1977
Hicks, T.G. and Valorie, C.M. Handbook of Effective Technical Communications. EA Books, 1989

MF210  Flight Rules and Procedures 2
No. of hours per week: two hours for two semesters

A second-year subject in the degree of Bachelor of Technologies (Aviation).

Subject aims
This subject is designed to provide students with a knowledge of flight rules and procedures to cover various licence levels and operational situations in sufficient depth often in excess of that required for a Commercial Pilot Licence.

Subject description
Operation performance and flight planning to CPL: Broaden understanding of flight manual. enroute performance and methods of cruise control, choice of route...
and amount of reserve fuel, the use of aircraft performance data.

Flight rules and aviation law to ATPL:
Privileges and limitations, flight rules and conditions of flight.

References
CAA Regulations, Orders, etc. with amendments
Williams Town: Aviation Theory Centre, 1985
Thom, T. Basic Aeronautical Knowledge Volume 2. Williams Town: Aviation Theory Centre

MF220 Navigation and Meteorology 2
No. of hours per week: three hours for two semesters

A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an extensive understanding of the purpose, operation and limitations of some navigation methods and systems; and an ability to take into account the importance of the dynamic atmosphere to flight operations up to Airline Transport Pilot Licence standard.

Subject description
Navigation to ATPL:
Air navigation, air navigation instruments.
Meteorology to ATPL:
Physical basis of meteorology, observations and measurement of meteorological elements, climatology, high altitude meteorology and forecasting.

References
CAA. Aeronautical Information Publication. Civil Aviation Authority
CAA. Civil Aviation Orders. Civil Aviation Authority

MF231 Aircraft General Knowledge 2
No. of hours per week: two hours for two semesters

A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to reinforce and increase a student's basic understanding of the aerodynamic and aeronautical factors influencing aircraft performance up to Commercial Pilot Licence standard.

Subject description
Aircraft general knowledge to CPL:
Engines and general aircraft systems, thermodynamic systems, aircraft engine operation and control.
Aerodynamics to CPL:
Design features, characteristics of airflow, the operation of controls, asymmetric flight.

References
Aircraft general knowledge:

MF240 Theoretical Aerodynamics
No. of hours per week: four hours

A first-year second semester subject taken in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to reinforce a student's understanding of the basic aeronautical and aerodynamic factors influencing aircraft performance and present a theoretical explanation for the observed effects of flight parameter changes.

Subject description
Incompressible flow theory, aerofoil pressure distribution, wind tunnel testing, aerodynamic performance factors, aircraft stability and control.

References
Pallet, G.H. Aircraft Instruments. 2nd ed, Pitman, 1978

MF250 Human Factors and Performance
No. of hours per week: three hours for two semesters

A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an introduction to the human factors affecting the performance of demanding tasks in a high work load environment like an aircraft cockpit.

Subject description
Psychology, cockpit layout, task performance, accident analysis, decision making.

References
MF260 Advanced Propulsion and Aircraft Systems
No. of hours per week: two hours for two semesters
A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an advanced understanding of the operation and maintenance of the propulsion and activating elements of the aircraft they will be using to the level of Airline Transport Pilot Licence.

Subject description
Gas turbines, operations, propulsion developments, fleet maintenance, inspection technology, certification.

References
Department of Transport and Communications. Aircraft Maintenance Text 4

MF270 Aircraft Materials and Structures
No. of hours per week: three hours for two semesters
A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an introduction to the strength of materials and their behaviour as loaded members in aircraft structures.

Subject description
Structural loading, mechanics of materials, material properties, metal corrosion, fatigue.

References
US FAA. Regulation Data AC 43.13 Acceptable Methods, Techniques and Practices. FAA/IAP

MF280 Avionics and Electronics
A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an understanding of the operation of aviation systems that are essentially electronically driven or controlled.

Subject description
Analog electronic circuits, frequency response, digital electronic concepts, electronic interconnection.

References
Cripps, M.D. Computer Interfacing — Connection to the Real World. London: Edward Arnold, 1989
Smith, RJ. Electronics Circuits and Devices. 2nd ed. Wiley, 1987

MF290 Aviation Business Management
No. of hours per week: three hours
A second-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with the knowledge of the functions of aviation business operations and the various roles within an organisation.

Subject description
Business management, flight administration, financial control.

References
CAA, Regulations, AIP, Orders etc. with amendments

MF310 Instrument Rating Theory
No. of hours per week: two hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to give students an extensive knowledge of instrument and procedural theory applicable to the Command Instrument Rating.

Subject description
Radar procedures, instrumentation, planning and operations.

References
CAA, Regulations, AIP, Orders etc. with amendments

MF320 Principles of Instruction
No. of hours per week: two hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to give students an extensive understanding of the principles of instruction and to develop practical instructional techniques.

Subject description
Definition of learning, human behaviour, lesson planning and presentation.

References
CAA, Flight Instructors Manual. CAA, 1988
Mager, RF. Preparing Instructional Objectives
US DOT. Aviation Instructors Handbook. US Department of Transportation

MF330 Ground School
No. of hours per week: three hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with the experience of undergoing a regular ground school as used by airlines for the introduction of crew to a new type of aircraft. Actual training methods will be used where possible backed up by a simulation of these methods where necessary.

Subject description
Aircraft layout
Description of the aircraft systems
Engine performance and limitations — safe operating conditions
Aircraft performance and flight envelope
MF340 Aircraft Design
No. of hours per week: three hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide a student with an advanced understanding of the aeronautical and aerodynamic factors influencing aircraft performance and present a theoretical explanation for the observed effects of flight parameter changes.

Subject description
Theory of compressible flow, subsonic, transonic and supersonic aerfoils and wings, dynamic stability, airscrews.

References

MF350 Aviation Facilities Management
No. of hours per week: three hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to develop in the student advanced skills in team-work, self confidence leadership.

Subject description
This course will expose the student to a broad range of advanced airborne equipment, the nature of operations associated with such equipment including crew interaction and human factors, in order to ease the transition from general aviation to airline operations. Topics include: aviation instruction, psychology of learning, flight deck management, multicrewing, leadership.

References
CAA. Flight Instructors Manual. CAA, 1988
Hurst, I. and L. Pilot Error Granada, 1976
Weiner, E.L. and Nagel, D.C. Human Factors in Aviation. 1988

MF360 Aviation Project
No. of hours per week: three hours for two semesters
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with the opportunity to conduct a major private research exercise in the field of aviation and present the finding to a group forum for critical appraisal.

Subject description
This is a major project and should be of a practical nature, relating to the aviation industry, linking the aspects of the course with the specific task chosen by the student. The project may be selected from a list supplied by the supervising staff or by negotiation between the student and the supervising staff. The project may be carried out independently or in groups of two, provided the extent of each student’s contribution is clear.

Reference

MF370 Aircraft Design
No. of hours per week: three hours for two semesters
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with comprehensive understanding of the design principles behind the design of an aircraft.

Subject description
A selection of two topics taken from the following list will be offered in any one year. For example: structural design, aerodynamic design, environmental comfort, Noise Vibration Harshness (N.H.V.) design.

References
Dole, E.C. Fundamentals of Aircraft Material Factors
Harris, C.M. Handbook of Noise Control. 2nd ed, McGraw-Hill, 1979
Megson, T.H. Aircraft Structures for Engineering Students metric. Arnold, 1972
Stinton, D. Design of the Aeroplane Collins, 1985
US FAA. Regulatory Data AC 43.13 Acceptable Methods, Techniques and Practices. FAA/IAP

MF380 Aircraft Navigation and Control Systems
No. of hours per week: two hours for two semesters
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with a comprehensive understanding of the theory behind the operation of navigation systems and control systems on aircraft.

Subject description
Control system theory, block diagrams, transfer functions, feedback, stability. Application of electronic circuits and computers in the control of aircraft systems. Navigation systems, glass cockpits, information transfer, transducer, data acquisition.

References
Smith, R.J. Electronics Circuits and Devices. 2nd ed, Wiley, 1987

MF390 Aviation Facilities Management
No. of hours per week: three hours
A third-year subject in the degree of Bachelor of Technology (Aviation).

Subject aims
This subject is designed to provide students with an understanding of the requirements for managing aviation facilities.

Subject description
Human resource management, industrial relations, computer management systems, airworthiness requirements, maintenance management, current issues. Airport management, security and safety. Management responsibilities, public law and workplace law.
MM121 Energy Systems

Subject aims
Energy Systems deals with two important aspects of mechanical engineering: low grade energy conversion and heat transfer (thermodynamics) and power transmission (machine dynamics).

Subject description

References
Rayner, J. Basic Engineering Thermodynamics on SI Units. 3rd ed, London: Longman, 1971

MM122 Chemistry and Materials

Subject aims
To introduce all engineering students to the concepts in chemistry and materials technology and their application in the processing of engineering materials.

Subject description
This subject uses basic concepts in chemistry and materials technology in order to understand the behaviour and properties of materials. Students are introduced to a range of manufacturing methods used in the processing of materials.

In particular the chemistry topics relate to both energy systems and materials. Material presented in this subject has been chosen largely on the basis of maximising the educational benefit to all students regardless of the course pursued in later years.

Syllabus
Direction of chemical reactions. Chemical equilibria.  
Chemical kinetics.  
Stoichiometry.  
Electrode potentials and galvanic cells. The Nernst equation.  
Equilibrium constants from cell potentials. Practical galvanic cells. Corrosion and protection methods.  
Organic chemistry: addition and condensation polymers.  
Fuels. Aliphatic and aromatic organic compounds.  
Structure of materials including atomic packing and density.  
Material deformation, strengthening mechanisms. Phase equilibria and phase diagrams. Engineering alloys.  
Materials processing in manufacturing: methods including casting, forming, cold working, hot working, recrystallization: polymer processing including extrusion and injection, moulding of thermosets and thermoplastics. Finishing methods: machining, grinding and polishing.  
Specifications  

Textbooks  
Chemistry  

MM123 Engineering Graphics and CAD  
No. of hours per week: two and a half hours for two semesters  

A first-year subject in all engineering degree courses.  

Subject aims  
The aim of the subject is to introduce the students to the fundamentals of engineering drawing standards used for graphical communication and to guide them in developing the required skills and abilities for presenting their design ideas either as sketches or finished drawings by using the drawing board or a CAD system. Furthermore, the subject aims at introducing the students to 3D spatial relationships and graphical methods for solving engineering problems.  

Subject description  
The topics covered during the year refer to orthographic projection, auxiliary projection, relationships of points and lines in 3-dimensional space, intersections of solid objects, development of surfaces, detail drawings, assembly drawings, civil engineering conventions, electrical and electronic engineering conventions, mechanical engineering conventions, graphical presentations and graphical solutions to engineering problems, and engineering drawing analysis.  
The subject is taught on both the drawing board and CAD system. Equal time is given to each method of drawing while an effort is made to coordinate the topic coverage in order to highlight their particular advantage. Each topic is covered by an introductory part followed by a hands-on exercise to reinforce the theory. Out of class assignments are also an integral part of this subject.  

MM169 Services  
No. of hours per week: three hours in first semester, two hours in second semester  
Prerequisites: nil  
Instruction: lectures, tutorials, field excursions and laboratory tests  
Assessment: examination 80%, assessed work 20%  

Subject aims and description  
A first-year subject of the degree of Bachelor of Technology (Building Surveying) intended to provide students with an understanding of services such as water, electrical, sewerage, heating required in buildings; together with the scientific basis of such service systems such as a knowledge of thermodynamics.  

References  

MM180 Construction Materials  
No. of hours per week: three hours  
Prerequisites: nil  
Instruction: lectures, tutorials, laboratory work  
Assessment: examination 80%. reports 20%  

Subject aims and description  
A first-year subject in the degree of Bachelor of Technology (Building Surveying), intended to give students an understanding of the behaviour of building materials such as timbers, bricks and blocks, cement and concrete, bituminous materials so that they can determine whether traditional materials are being used correctly and appraise new materials. Introduction to other materials used in buildings, and of joining methods.  

References  

MM209 Engineering Practices  
No. of hours per week: thirty-six hours  
A second-year subject in the degree of Bachelor of Engineering (Mechanical).  

Subject aims and description  
This subject provides students with an introduction to current engineering trade practices and the development of personal elementary 'hands on' skills in these trades. Students will attend a week block of full-time Engineering Practices in one non-teaching week prior to the start of second semester. The program will operate for four and a half days per week and will permit students to complete the three trades within the week. Groups will be arranged to suit the current University calendar.  
The syllabus is comprised of lectures, demonstration of specific trade skills and techniques, and completion of 'hands-on' practical work in basic TAFE trade areas of:  
Electrical/Electronic Systems (twelve hours)  
Machine Shop (twelve hours)  
Welding (twelve hours)  

MM210 Industrial Processes  
No. of hours per week: two hours for two semesters  
Assessment: exam, practical work, assignments  

Subject aims and description  
Brief history of the development of the chemical industry. The operation of major chemical and mineral processing industries using examples of industries employing inorganic, organic and natural sources. Practical work in physical chemistry and thermodynamics in support of the syllabus for MM211, Introduction to Chemical Engineering.
Textbooks
As specified by the lecturer

Reference

MM211 Introduction to Chemical Engineering
No. of hours per week: two hours for two semesters
Assessment: exams, assignments

Subject aims and description
Chemical engineering thermodynamics: physical equilibrium, bubble and dewpoint relations, phase diagrams, activity and activity coefficients, Gibbs Duhem equation, chemical reaction equilibria, heats of reaction and mixing.

Basic design techniques: mass and energy balance calculations; flowsheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.

Textbooks

MM220 Energy Systems
No. of hours per week: four hours
Assessment: examination, laboratory assignment

Subject aims and description
This subject is a second-year first semester subject in the degree of Bachelor of Engineering (Manufacturing).
This subject comprises:
Thermodynamics (two hours per week).
Fluid mechanics (two hours per week).

Thermodynamics
Revision of non-flow processes with gases.
Revision of steady flow processes with gases and liquids.
Non-steady flow with non-reacting fluids (mechanical engineering students only).
Second law of thermodynamics.
Reversibility.
Entropy of gases, liquids and vapours, T-S and h-s charts.
Vapour compression refrigeration.

Fluid mechanics
Fundamental concepts: perfect and real fluids; density, compressibility, viscosity, Newtonian and non-Newtonian fluids, surface tension.
Revision of fluid statics: measurement of pressure, laws of fluid pressure, hydrostatic thrust on submerged surfaces. Basic fluid dynamics: continuity, energy and momentum equations; velocity measurements.
Qualitative treatment of: laminar and turbulent flow, boundary layers in incompressible conduit flow. Viscous flow in pipes and ducts: head losses due to friction; other head losses; friction factor for laminar and turbulent steady flow.
Aim: Following a brief revision of MM120 studies, students will be introduced to the second law of thermodynamics, entropy, energy conservation in unsteady fluids and reversibility.

Students will be introduced to the mechanics of fluids, covering fluid properties, fluid statics, momentum, energy and an introduction to boundary layer theory.

Textbooks

References
Schmidt, Mollier Entropy — Entropy Diagram for Steam. Latest ed, Springer

MM222 Energy Systems
No. of hours per week: four hours for semester one and three hours for semester two
This subject is for all degree of Bachelor of Engineering (Mechanical).

Subject aims and description
This subject comprises:
Thermodynamics (two hours per week).
Fluid mechanics (one hour per week).

Thermodynamics
Revision of non-flow processes with gases.
Revision of steady flow processes with gases and liquids.
Non-steady flow with non-reacting fluids.
Second law of thermodynamics.
Entropy of gas, liquids and vapours, T-S and h-s charts.
Reversibility.
Vapour compression refrigeration.

Fluid mechanics
Fundamental concepts: perfect and real fluids; density, compressibility, viscosity, Newtonian and non-Newtonian fluids, surface tension.
Revision of fluid statics: measurement of pressure, laws of fluid pressure, hydrostatic thrust on submerged surfaces. Basic fluid dynamics: continuity, energy and momentum equations; velocity measurements.
Qualitative treatment of: laminar and turbulent flow, boundary layers in incompressible conduit flow. Viscous flow in pipes and ducts: head losses due to friction; other head losses; friction factor for laminar and turbulent steady flow.

Aim: Following a brief revision of MM120 studies, students will be introduced to the second law of thermodynamics, entropy, energy conservation in unsteady fluids and reversibility.

Students will be introduced to the mechanics of fluids, covering fluid properties, fluid statics, momentum, energy and an introduction to boundary layer theory.

Textbooks

References

MM230 Engineering Materials
No. of hours per week: two hours for two semesters
This subject is a second-year subject in the School of Mechanical and Manufacturing Engineering.

Subject aims and description
It aims to establish a working knowledge of the relationships between the structure and properties of materials as applied to fields of mechanical and manufacturing engineering.
Subjects covered include:
This subject is taken in two parts: electronics and Engineering. 5th 1987

1. transducers, digital to analogue and analogue to digital Wesely, 1982


3. instrumentation and measurement systems, both of which Van Vlack, L.H. Materials for Engineering. Reading, Mass: Addison-Wesley, 1982

**MM240 Electronics and Measurement Systems**

No. of hours per week: two hours for two semesters

**Subject aims and description**

This subject is taken in two parts: electronics and instrumentation and measurement systems, both of which run for two hours per week for one semester, and is common for all degree students in the School of Mechanical and Manufacturing Engineering.

**Electronics**

Digital electronics and microcomputers — introduction to computers, binary, octal, and hexadecimal numbers; BCD numbers; binary arithmetic; two's complement notation; bit grouping; basic digital devices — logic gates, combining logic gates; flip flops and latches: multiplexers and demultiplexers; semiconductor memories; introduction to microcomputers; simplified microcomputer operation.

Linear amplifiers — introduction to BJT amplifiers; characteristics of amplifiers; consideration of functions of components of simple single transient amplifiers: input/output resistance; multistage amplifiers; bandwidth product; simple Bode plots; operation amplifiers. Transducers — active and passive transducers: thermocouple, Piezoelectric, photoelectric, optical, resistive, capacitive, inductive. Communications — modulation — amplitude, frequency, pulse code. Motors — DC motors, AC motors, AC/DC motors.

**References**


Instrumentation and measurement systems

Principles and role of sensors for the measurement of displacement, time, velocity, force, pressure, flow-rate, density and temperature. Transducing elements for conversion among mechanical, thermal and electrical quantities, including examples of electro-mechanical, capacitance, piezoelectric, resistance, inductance, and thermo-electric transducers.

Analysis of the static and dynamic performance of electromechanical transducers, input-output characteristics of transducer; compatibility of transducers, amplifiers, measuring circuits and recorder; in measuring systems. Applications of digital measurement techniques, digital type transducers, digital to analogue and analogue to digital conversions, data transfer and communications between microcomputers.

**References**

Bell, D.A. Electronic Instrumentation and Measurements Reston, VA: Reston Pub Co, 1983


**MM241 Applied Mechanics**

No. of hours per week: four hours

Assessment: examinations and assignments

A second-year subject in the degree of Bachelor of Engineering (Manufacturing).

**Subject aims and description**

Aims to consolidate earlier studies of force equilibrium, deformation and stressing of simple components and the extension of analysis to more complex loadings which require the transformation of stress in two dimensions.

Mechanics of materials:

Frames and machines: analysis of axial and shearing forces and bending moment in plane frames and machines. Stresses in frame members resulting from axial, shear and flexural loading. Review of bending formulae derivation.

Torsion: general treatment of elastic, torsion of circular section members.

Plant stress: general treatment of plane stress including determination of principle stress planes and their orientation, maximum shear stress planes and their orientation — including cases where the maximum shear plane stress is associated with the zero principal stress. Mohr’s stress circle. Examples will include members subject to combined bending, torsion, and axial load.

**Textbook**


Dynamics of machines: kinematics of particles: analysis of general plane motion of a particle using rectangular, normal and tangential, and polar coordinate systems.

Kinetics of particles: development and application of F = ma, energy and momentum approaches to the solution of problems relating forces, accelerations and velocities of particles in general plane motion.

Kinematics of rigid bodies: analysis of linear translation and fixed rotation of a rigid body.

Kinetics of rigid bodies: development and application of F = ma, energy and momentum approaches to the solution of problems relating forces, accelerations and velocities of rigid bodies in linear translation fixed axis rotation.

**References**


**MM243 Applied Mechanics**

No. of hours per week: four hours for first semester, three hours for second semester

Assessment: examinations and assignments

A second-year subject in the degree of Bachelor of Engineering (Mechanical).

**Subject aims and description**

Semester one aims to consolidate earlier studies of force equilibrium, deformation and stressing of simple components and the extension of analysis to more complex loadings which require the transformation of stress in two dimensions.

Mechanics of materials:

Frames and machines, torsion, plane stress, Mohr’s stress circle.

Dynamics of machines:

Frames and particles, kinetics of particles, kinematics of rigid bodies, kinetics of rigid bodies.

Semester two aims to extend earlier work in solid mechanics and provide the foundation for later studies in the elastic
and inelastic behaviour of engineering structures.

Mechanics of materials:
- Static indeterminacy, plane strain, curved beams, theories of elastic failure: yielding.
- Dynamics of machines:
- Kinematics of rigid bodies: relative velocity, kinetics of rigid bodies; force mass and acceleration; general plane motion; balancing of rotating shafts, work and energy.

Textbooks

MM250 Design for Industry
No. of hours per week: two hours for two semesters

This subject is common for all degree students in the School of Mechanical and Manufacturing Engineering.

Subject aims and description
Lecture and tutorial topics are listed below.

Introduction to the course; introduction to design; design documentation; standards and specifications; tolerances in design; geometry tolerancing; design criteria; failure theories for static strength; bolted and gasketed joints; welded joints; lubrication and journal bearings; rolling element bearings; chain and belt transmissions; optimum drive selection; stress concentration in design; design for fatigue and endurance; checking machine elements for fatigue and endurance limit; shaft design; shaft design standards; estimating shaft dimensions; mechanical drives; couplings; clutches and brakes; electric motors; introduction to pneumatic and hydraulic systems.

References

MM260 Ergonomics
No. of hours per week: two hours for second semester

A second-year subject in the degree of Bachelor of Engineering (Mechanical)

Subject aims and description
The course aims to give students an understanding of the place and role of ergonomics in the workplace. It is concerned with the study of how people interact with their environment and how this affects their performance, health, safety and well-being. It explores the design of products, systems, work environments and processes that take into account the needs and capabilities of the human body.

References

MM269 Services
No. of hours per week: two hours
Prerequisite: MM169 Services

Instruction: lectures, tutorials and field excursions

Subject aims and description
A second-year subject of the degree of Bachelor of Technology (Building Surveying) dealing with the services encountered in industrial and low rise buildings. The following topics are covered:
- Electrical services: principles of illumination, emergency and exit lights. Communication systems. Specialty services: trade waste disposal.

References
- American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks. (Fundamentals, Systems, Application and Equipment volumes), latest editions, 1985

MM270 Manufacturing Technology and CAD/CAM
No. of hours per week: two hours for two semesters

Subject aims and description
This subject is a second-year subject in the School of Mechanical and Manufacturing Engineering.

This subject is comprised of a CAD/CAM section (of theory and hands-on) and a lecture based manufacturing technology section, each occupying one semester.

Assessment of the two sections will be completed on a semester basis, with the manufacturing technology section being assessed by examination and assignment and the CAD/CAM section being assessed by separate assignments in CAD and CAM and submitted reports on the CAM hands-on work.

The subject aims to provide students with an understanding of some of the fundamental technologies employed in manufacturing industry. Students will develop an appreciation of the principles underlying these technologies, how they are applied, and how they affect product cost and quality.

Students will also be introduced to the principles of computer aided design (CAD) and computer aided manufacture (CAM), and through hands on exercises, begin to develop skills in the application of CAD/CAM.

References
MM271  Manufacturing Technology
No. of hours per week: four hours
Assessment: examinations and assignments

Subject aims and description
The subject is taken in conjunction with MM272 (Manufacturing Practices) and also complements the subject MM270 taken by all manufacturing and mechanical engineering students.

As such, it expands upon the fundamentals of those subjects to provide the manufacturing engineering student with both a wider and more rigorous treatment of a range of manufacturing technologies. In addition, students are introduced to concepts and techniques associated with engineering dimensional metrology which serve as a bridge between the technologies and quality in manufacture.

Texts

MM272  Manufacturing Practice
No. of hours per week: four hours
Assessment: practical work and assignments

Subject aims and description
The aims of this subject are:
- to familiarise the students with the workings and functionality of manufacturing machines;
- to reinforce materials taught in the Manufacturing Technology and CAD/CAM subjects of the course;
- to develop in the students experimental skills;
- to develop the students report writing skills.

MM280  Introduction to Management
No. of hours per week: two hours for two semesters OR four hours for one semester

Subject aims and description
Topics of each week's lectures and tutorials are listed below:
- Self management;
- People management;
- Industry management;
- Management functions and context.

Textbook

Plus selected references

MM297  Professional Computing
No. of hours per week: one hour two semesters
Prerequisite: standard first year introductory course EE188 or a course equivalent to the computing component of EE188
Assessment: test and assignment

A second-year subject in the School of Manufacturing and Mechanical Engineering.

Subject aims and description
This subject aims to teach the development of structured programs using the PASCAL language. The structure and function of system software such as operating systems, compilers etc. are discussed as examples. FORTRAN is introduced as another language for programming engineering problems.

Building on the PASCAL programming taken in the first year the students will gain programming experience in both PASCAL and FORTRAN 77. The problems given will be relevant to the students specialising in chemical, production or mechanical engineering fields.

Topics: data structures and algorithms, and structured programming using PASCAL language, architecture of operating systems (compilers, editors, linkages, assemblers); overview of other high level languages and introduction to syntax of FORTRAN 77; programming with FORTRAN 77.

Texts and References
Eller, D.M. Structured FORTRAN 77 for Engineers and Scientists. 2nd ed, Menlo Park: Benjamin Cummings, 1987
Savitch. W.J. Turbo Pascal: an introduction to the art and science of programming. 3rd ed, Redwood City: Benjamin Cummings, 1992

MM312  Unit Operations
No. of hours per week: four hours
Assessment: practical work and examination
A third-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to impart understanding of physical phenomena involving particles, and the importance of these in chemical manufacturing.

Fluid/particle systems: hydraulic classification, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.

Handling and transport of powders, powder mixing, crushing, grinding and screening.

Textbook

MM315  Heat Transfer
No. of hours per week: five hours
Assessment: practical work and examination
A third-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to provide the student with a sound approach to the design and selection of heat transfer equipment.

Description and characteristics of shell and tube exchangers, and alternative geometries; boilers, condensers, etc. with examples of their use.

Review of previous work in heat transfer, namely unidimensional conduction, Newton's Law of cooling, overall heat transfer coefficients.

Prediction of heat transfer coefficients by the mechanisms of natural and forced convection, film and dropwise condensation; nuclear and film boiling. LMTD, FT and ENNTU methods to determine temperature driving forces.

Thermal rating of shell and tube exchangers; pressure drop in heat exchangers.

MM320  Energy Systems
No. of hours per week: four hours
A third year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
This subject comprises:
Thermodynamics two and a half hours per week
Fluid mechanics one and a half hours per week.
and of reaction, non-flow combustion. Adiabatic flame temperature. Dissociation.

Fluid mechanics:
- Dimensional analysis and similarity. Methods of dimensional analysis; dimensionless groups associated with problems occurring in fluid flow including effects of natural and forced convection; modelling. Solution of turbulent flow problems; friction factor for laminar and turbulent steady, incompressible, viscous flow in pipes and ducts; series and parallel arrangements. Rotodynamic machinery; Classification and external considerations. power/flow characteristics, efficiency, similarity laws, system matching.

**References**


**MM321 Fluid Mechanics**

*No. of hours per week: three hours*

A third year subject in the degree of Bachelor of Engineering (Manufacturing).

**Subject aims and description**

Kinetic and potential energy, the equivalence of pressure and head. Bernoulli equation and its application to Pitot tube, orifice plate and Venturi, and weir plates.

Momentum and the momentum equation. Viscosity, its measurement and use. Criteria of similarity; dimensional analysis and its application to the derivation of the Stanton (Moody) chart. Equivalent length and diameter. Stanton and von Karman charts. The Hagen- Poiseuille equation.

Operation and characteristics of centrifugal pumps and fans; means of output control. The virtual head equation, the dimensionless groups relating pump head, throughput, power consumption and efficiency with impeller diameter and speed. Specific speed; cavitation and NPSH; relationships between frictional head loss in pipework and head development by pump or fan.

Application of the above concepts to the solution of problems.

Positive displacement pumps and blowers; valves — gate, globe, diaphragm, pinch, ball, etc.

**Textbook**


**MM330 Advanced Materials**

*No. of hours per week: one hour*

A third year subject in the degree of Bachelor of Engineering (Manufacturing).

**Subject aims and description**

Fracture mechanics:
- Plane strain fracture toughness testing; Valid test sample, determination of stress intensity factor, toughness determination for a variety of materials and configurations.
- Fibre composite materials:
  - Fabrication and manufacture of fibre reinforced composites.
  - Failure modes, analytical design, empirical design.
- Laminate composite analysis, examples of laminate analysis using computer packages.

Surface engineering:
- Nature of wear, quantitative description of wear, testing and evaluation for wear resistance.
- Review of industrial systems for modification of surfaces by infusion treatments and surface coatings.
- Structure modifications, properties and applications resulting from:
  - transformation hardening
  - electrochemical techniques
  - thermochemical techniques
  - physical and chemical vapour deposition
- Selection of surface modification techniques.

**References**


Richardsen, D.W. Modern Ceramics Engineering. Boston: Marcel Dekker, 1982

Tsa, S.W. Composites Design. 4th ed, Dayton, Ohio: Think Composites, 1988

**MM331 Engineering Materials**

*No. of hours per week: two hours*

A third year subject in the degree of Bachelor of Engineering (Mechanical).

**Subject aims and description**

Fracture mechanics: plane strain fracture toughness testing; validity; examples of KIC analysis. Fatigue: life calculations and analyses. Fibre composite materials: fabrication and manufacture; metal matrix composites; high temperatures, high strength composites. Design of cellular solids, including the facing core, and their adhesion: analytical design; empirical design; critical failure modes. Laminate composite analysis; analysis using computer packages. Advanced ceramics: characterisation of ceramics; surface flaws; statistical distribution; Weibull modulus; strengthening of ceramics; design and selection of advanced ceramics for structural and high temperature applications. Surface engineering: nature of wear; testing and evaluation for wear resistance; quantitative description of wear; review of industrial systems for modification of surfaces.

**References**


**MM340 Applied Mechanics**

*No. of hours per week: three hours*

A third year subject in the degree of Bachelor of Engineering (Manufacturing).

**Subject aims and description**

Part A Solid mechanics:
- To extend earlier studies of stress, strain and deflection of elastic systems and introduce the concepts of yielding, failure and deformation beyond the elastic limit.
Part B Vibrations:
A basic course in vibrations covering the response of one, two and multi degree of freedom discrete linear system (with and without damping) to free, transient and steady state harmonic forcing.

Textbook
Part A Solid mechanics

References
Part A Solid mechanics

Part B Vibrations

References
Part B Vibrations
Bishop, R.E.D. Vibration. 2nd ed, Cambridge: Cambridge Univ. Press, 1979

MM341 Mechanics and Machine Systems
No. of hours per week: six hours
This subject consists of three parts:
MM341A Mechanics of Materials;
MM341B Mechanics of Machines;
MM341C Control Engineering

MM341A Mechanics of Materials
No. of hours per week: two hours
Subject aims and description
A course that concentrates on structural analysis, buckling instability and complex bending. Beam deflections. Review of elastic curve equation for flexural loading, and beam deflection. Deflection of statically determinate beams by integration, discontinuity functions and superposition methods. Deflection and reactions in statically indeterminate beams by discontinuity functions and superposition methods. Plane structures. Deflection and forces in plane structures by strain energy and moment distribution methods or slope deflection equations. Buckling and instability. Short, intermediate and long columns, with and without eccentric loading; buckling of circular rings and tubes. Torsion and shear in thin walled open sections in unsymmetrical bending and the shear centre.

References
Harlow: Longmans Scientific and Technical, 1988

MM341B Mechanics of Machines
No. of hours per week: two hours
Subject aims and description

References

MM341C Control Engineering
No. of hours per week: two hours
Subject aims and description

Representation on logarithmic plots — Bode diagrams. Basic factors, plotting procedure, applications to the analysis of the performance of linear control systems.

References
Dransfield, P. Systems and Control. Part 1 and 2, Monash University, 1988

MM341A Mechanics of Materials
No. of hours per week: six hours
This subject consists of three parts:
MM341A Mechanics of Materials;
MM341B Mechanics of Machines;
MM341C Control Engineering

MM341B Mechanics of Machines
No. of hours per week: two hours
Subject aims and description

References

MM341C Control Engineering
No. of hours per week: two hours
Subject aims and description

Representation on logarithmic plots — Bode diagrams. Basic factors, plotting procedure, applications to the analysis of the performance of linear control systems.

References
Dransfield, P. Systems and Control. Part 1 and 2, Monash University, 1988

MM3410 Design for Manufacture
No. of hours per week: four hours
Assessment: examination, assignments and project work
A third year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
Design of Tools for Metalworking: cutting tools, high removal tools, single points, multipoint and special form tools design.
Design of diesets for sheetmetal work; blanking, bending, deep drawing diesets design.
Dies and fixtures design: isolating, clamping and other elements design. Dimensional analysis: calculation of locating errors.
Kinematics of non uniform motion: theory and practice — design of cams and cam followers, linkages design.
Automation of production: logic circuits, pneumatic circuits and electropneumatic circuits design. Circuits design with P.L.C.S., hydraulics, introduction to robotics.
Major project: automation of manual tasks. Thirteen weeks’ duration.

Textbook

References

MM351 Design for Industry
No. of hours per week: four hours

A third year subject in the degree of Bachelor of Engineering (Mechanical)

Subject aims and description
This subject is designed to develop students in design aspects of common industrial systems and to consolidate their first industrial experience into the design process.
Assessment will be by projects and assignments on these topics:
Design process: advanced aspects of decision-making strategies within Australian industry. Further consideration of techniques applicable to divergent idea generation and convergent solution selection processes.
Fluid power systems: design characteristics of hydraulic and pneumatic systems. Symbols for circuit components and functions. Linear actuators, pumps and motors. Control valving for pressure, directional and flow control. Open loop system analysis, including frictional losses. Pressure and flow variations during fluid system cycles.
Pressure vessel design: introduction to AS1210 Unfired Pressure Vessels. Design aspects of available materials, vessel features, cylindrical shells, dished ends and quick-actuation closures. Inspection openings and bolted connections with gaskets. Computations for pressure vessels and submission to local regulatory authorities.

References


MM360 Ergonomics
No. of hours per week: three hours

A third year subject in the degree of Bachelor of Engineering (Mechanical)

Subject aims and description

References
Wickens, C.D. Engineering Psychology and Human Performance. Columbus: Menilli, 1984

MM370 Manufacturing Technology
No. of hours per week: five hours

A third-year subject in the degree of Bachelor of Engineering (Manufacturing)

Subject aims and description
Sheetmetal work: presses; classification, drive systems and mechanisms. evaluation of different types, operation, applications, selection. Press feed mechanisms; types, advantages and disadvantages, applications. Die cushions. Bending of sheetmetal; analysis of die types, forces, recoil, springback, blank development. Deep drawing; planning, force requirements, variables, effects of clearance, cutting with shear, stripping force. Materials selection for press
forming; general requirements, mechanical tests, tensile test, analysis of stress-strain curves and parameters, \( r \) and \( n \) values, tests to simulate processes, stretch forming tests, deep-drawing tests, bending tests, forming-limit diagrams, applications. Function and terminology for die components; blanking dies, commercially available die sets, punches and accessories.

Numerical control: introduction to NC machine tools, comparison with conventional, hardware configurations, software implementation, control systems, machine control unit, feedback, sensitivity. NC system components; comparison of actuation systems, electric, hydraulic, pneumatic. Design considerations for NC machine tools; design differences between conventional and NC machines, mechanical design considerations, control system design considerations. System input/output; types of input media, symbolic codes, tape input format, communication with MCU. NC programming; programming methods, computer assisted NC programming [processors, post; processors], part programming languages — APT, Computer Numerical Control (CNC), Direct Numerical Control (DNC); comparison, management implications.

Plastics and rubbers; overview of processes. Melt forming, rheology, mathematical analysis of pseudoplastic, dilatent, newtonian flow, time dependant flow, thixotropy, viscosity, tractional viscosity. Extrusion defects; causes and prevention. Extrusion die design. Single and multiple screw extrusion; hardware and product characteristics, Injection moulding; mould design, basics of the mouldflow philosophy, cooling systems. Thermoforming die design. Elastomers; C black, other additives, compounding. Compression and injection moulding.

Textbooks


References


MM380 Productivity Improvement

No. of hours per week: two hours
A third-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description

Productivity: definition, social and economic implications, waste reduction attitudes.
Work study: method study, time measurement, (stopwatch, predetermined methods, work sampling).
Value analysis and engineering.
Ergonomics: basic ideas related to method study.
Japanese manufacturing techniques.

Laboratory exercises will be conducted on relevant issues.

References

Appropriate papers/references from journals will be given in class.
Class discussions will be supported by videos, etc.

MM381 Managerial Economics

No. of hours per week: two hours
Assessment: assignments and examinations
A third-year subject in the Degree in Manufacturing Engineering.

Subject aims and description

Economics and finance
Topics will be drawn from:
- supply and demand, elasticity, pure competition, monopoly and oligopoly
- macro-economics of cost, profit marginal concepts
- source of finance and cost of capital
- macro-economic fundamentals
- banking system and credit
- national accounts, GDP, government controls
- productivity and international comparisons
- markets, resource allocation
- demand analysis, forecasting
- economic indicators

Accounting
- introduction to accounting
- financial accounting and annual reports, financial ratios
- management accounting, budgeting, standard costing, historical costing, marginal costing.

An accounting/finance package will be used in teaching the accounting section.

Textbook


References


MM396 Computer Science

No. of hours per week: two hours
Prerequisite: MM297
Assessment: test and assignment
A third-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description

The subject aims to introduce how computer systems can be used effectively in manufacturing environments. This has two levels: on technical level the way processes, machines are controlled and on production level how the computers are used to organise databases, to manipulate data, by design of a system in-house or applications of packages (off-shelf).

Computer architectures, with emphasis on special purpose systems to support real time systems, communication between computers and machines, processes, etc.; database including an overview of mostly used systems; detailed discussion of relational databases including normalisation of data, design approaches, query languages; overview of a database package such as DBase III-V; spreadsheet modelling, implementation using a package.

Textbook and Reference

Sadka, P. DBase III Workbook. Swinburne Bookshop

References

Appropriate papers/References from journals will be given in class.
Class discussions will be supported by videos, etc.
MM420 Energy Systems

No. of hours per week: four hours

Subject aims and description

There are two parts:

Thermodynamics — two hours per week for one semester.

Fluid mechanics — two hours per week for one semester.


Fluid mechanics: rotodynamic machinery; internal characteristics, moment of momentum equation, introduction to flow through vane cascades, cavitation, significance of net positive suction head and fan total static pressure system matching and analysis. Fluid drag, boundary layers and wakes. Flow about submerged bodies; pressure drag; boundary layer theory; Navier-stokes equation, momentum and thermal boundary layer equations, effect of transition, separation and streamline pressure gradient; skin friction; wake flows. Compressible flow; revision of thermodynamics concepts, energy equation with variable density, gas and vapour flow through nozzles and diffusers, critical pressure ratio, choked flow, metastable flow, normal shock waves.

References


MM440 Vibration and Noise Control

No. of hours per week: two hours

Subject aims and description

This subject provides basic understanding of acoustic measurements and noise control techniques; and extends the earlier study of vibrations to engineering applications.

Topics covered include: continuous and branched systems. Vibration measurement. Balancing of solid rotors — field balancing. Sound measurement and analysis. Noise control

References

Buley, M.D. Course Notes on Industrial Noise Control

Irwin, J.D. and Graf, E.R. Industrial Noise and Vibration Control.


MM440C Control Engineering
No. of hours per week: one and a half hours
This subject provides experience in the analysis and design of control systems by classical and state-space methods.

Subject aims and description
Topics covered include: transient response and the root locus method; root loci and constant gain loci; construction of root loci; application of the root locus method to the analysis of the transient performance of closed loop systems. Frequency response analysis; polar plots; nyquist stability criterion. Modern control and state space techniques: state variable, state vector, state space and the representation of multiple input/multiple output systems; solution of the time-invariant state equation.

References
Dransfeld, P. Systems and Control. Part 1 and 2, Monash University, 1988

MM441 Control Systems
No. of hours per week: two hours
Assessment: assignment and examination
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
An introduction to classical methods of analysis for linear control systems.

Introduction to closed-loop control: definitions, terminology and examples. Mathematical modelling of physical systems; transfer functions, linearisation, block diagrams of closed-loop systems. Transient analysis: the inverse transform and the time solution of linear models, response of first and second order systems to a unit impulse and unit step inputs. Stability analysis: Routh's stability criterion for linear control systems. Frequency response analysis: steady state solution to sinusoidal inputs and the frequency response function G(jw), representation on logarithmic plots — Bode diagrams, nyquist stability criterion.

Textbooks
Dransfeld, P. Systems and Control. Part 1 and 2, Monash University, 1988
Ross, G. Computer Programming Examples for Chemical Engineers. Amsterdam: Elsevier, 1987

References

MM450 Design for Manufacture
No. of hours per week: four hours
Assessment: assignments, project work and examination
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
The subject is the second part of design for manufacture aims to prepare students with further knowledge of design of tooling, machinery and systems for quality production. Tooling design for metal working: economy and batch quantity, relationship. Tool design for: cold and hot forging, and diecasting.


Computer aided design: CAD systems, processing and techniques. NC programming, kinematics and robotics.

References

MM451 Design for Industry
No. of hours per week: four hours
A fourth year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
This subject is designed to develop students in design aspects of advanced industrial systems and to provide competence in project engineering work ready for their second industrial placement.

Assessment will be by projects and assignments on these topics: design analysis of thermo-fluid systems: design characteristics of fluid flow equipment. Pumps and fans, compressors and turbines. Vessels, valves, piping and flanges. Heat exchanger design options, configurations and insulation.


References
MM460 Ergonomics
No. of hours per week: three hours
Assessment: assignments and laboratory
A fourth year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
At the completion of this subject students should be able to demonstrate competence in ergonomic assessment of workplaces.
The major assignment for this subject will take the form of an ergonomic design of a workplace.
Ergonomics systems concepts: application of modelling processes to design solutions and problem analysis.

Human body. Kinesiology: lower body elements, locomotion and gait cycle in walking, running and jogging. Engineering psychology: memory modelling, mental loading, application to task design, attitude survey design and administration, assessment of physical quantities using psychophysics methodology.

Human-environment-workplace interface. Workplace requirements for screen based equipment, hand tools, work benches and desks, seating. Strain injury analysis: application to manual material handling, slipping, tripping and falling incidents, design criteria, relevant standards. Occupational overuse injury: types, origins, task design criteria, control measures.

Occupational health and safety issues. Occurrence analysis: introduction to accident causation philosophy, energy damage model, generalised time sequence model, Rowe's risk estimation model, application of the models to accident investigations. Safety: health and safety program design, H. and S. management principles, injury claims management.

References
Accident Compensation Act 1985

MM470 Computer Interfacing and Microprocessors
No. of hours per week: two hours
Assessment: project work and examination
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to provide students with a sound introduction to basic computer architecture, interfacing and networking principles as they relate to advanced manufacturing technology.

Boolean algebra, number systems, Karnaugh maps, sequential state machines and microprocessor architecture. Memory technology and mapping (addressing). Computer bus structures. Microprocessor programming levels (assembly and machine code), basic operating systems and compilers. Computer interfacing techniques, isolation and buffering devices. PLC's for data acquisition and buffering. Computing interfacing through serial and parallel communications.

IEEE488, RS232 links and programming ACK/NAK protocols. Introduction to networking topologies, OSI network model and common networking protocols (Ethernet, MAP/TOP).

References
Cammell, J. The RS232 Solution. 2nd ed, Berkeley, Calif.: Sybex, 1989
Cripps, M. Computer Interfacing — Connection m the Real World. London: Edward Arnold, 1989

MM471 Numerical Engineering
No. of hours per week: two hours
Assessment: tutorial assignments and examination
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to develop an understanding of the mathematics of Finite Element Analysis and the application of FEA to engineering problems.


Textbooks

References

MM472 Manufacturing Technology
No. of hours per week: five hours
Assessment: assignments and tests
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
Polymeric materials — blow moulding — parison production including parison programming. Cooling systems including economic analysis of specialised cooling. Stretch blowing moulding — effects on the materials and products and production economics in particular. Injection moulding. Introduction to molldflow. Rubber compounding and vulcanisation.


Textbooks
Rba. g. Elements of Metalworking Theory London: Edward Arnold, 1979

MM480 Facilities Planning and Design
No. of hours per week: three hours
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to introduce methods of analysis and planning of facilities layout considering products, processes, effective material handling facilities, etc. Relevant quantitative techniques such as queuing theory, location models, will be introduced where they are needed for design of facilities. Significance and objectives and strategies in facilities design. Product development: market research, forecasting, design. Process developmentplanning. Capacity planning: schedules, machines, manpower tools. Material handling requirements: principles, selection, design. Storage and warehousing. Spacing and activity relationship. layout design, conventional and computer aided approaches. Analytical models used: queuing, location models. Facility design for JIT; WCM.

Textbook

References
Relevant articles and papers from journals.

MM481 Decision Analysis
No. of hours per week: two hours
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
The aim of this subject is to introduce the decision making methodology and techniques available. To emphasise the need for formal approaches and the gain of structured, formal decisions. To examine several areas in manufacturing environments where crucial decisions benefit from the use of these methods.

Introduction to the DM methodology is followed by details of techniques. Single criteria decisions: cost consideration in decisions (cash flow). Effect of uncertainty, meaning of probability, encoding probability distributions. Tree structure of problems (a computer package will be used). Decision outcomes under uncertainty. Risk attitudes, utility functions. Approaching real world problems, a cyclical approach, strategy tables, influence diagrams. Sensitivity analysis. Obtaining information from tree analysis. Value of information control. Presentation of decision results. Multi-criteria decisions: traditional approaches such as Delphi technique reviewed. The analytical hierarchy process, methodology, modelling. Structuring the problem, judgements. Group decisions with AHP, other methods. Sensitivity analysis and presentation of results. Use of a computer package to experiment with AHP.

References
McNamee, P. Decision Analysis for the Professionals with SuperTree. Redwood City, Calif.: Scientific Press, 1987
Additional references will be given in class.

MM482 Manufacturing Operations Management
No. of hours per week: two hours
Assessment: assignments, project and exam
A fourth year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
The aim is to achieve a thorough understanding of all functions and their relationships in a manufacturing system, how it is planned, operated and controlled.

Structure of a manufacturing system via models such as SADT, IDEF, IDE functions and management of an enterprise (production/service); manufacturing function; development function-production function; support function; data processing; technology and manufacturing FMS, CAD/CAM); scheduling techniques at shop floor level; inventory control policies and models; MRP, MRPII, methodology; introduction to a computer implemented MRP, hands on experience; requirements for successful MRP implementations.

References
MM500 Manufacturing Project
No. of hours per week: six hours for one semester plus three weeks full-time
Assessment: thesis and observed technique
A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
The aim of this subject is to develop the students' skills in planning and executing a major individual project which draws upon and integrates a wide range of skills and knowledge acquired during the course. It is a major component of the final year.

This subject is the major individual research project in the course. At the end of the fourth year academic period, each student will be given, or allowed to select, a research project related to manufacturing engineering.

The student will be expected to make all preparations, designs, literature surveys, during the fourth year industrial training session. At the beginning of the final semester of the course, the student may be required to give a short oral presentation of the aims, objectives and experimental method to be followed.

MM501 Engineering Project
No. of hours per week: one hundred and thirty seven hours over eighteen weeks
Assessment: student seminar, technical report and performance assessment
A fifth-year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
This subject aims:
- to allow students to integrate the knowledge and skills they have gained throughout the course into a targeted engineering investigation with the aim of producing a report and, if appropriate, usable equipment;
- to develop individual initiative in pursuing an engineering objective;
- to plan and manage, in conjunction with a staff member, the progress of an engineering project.

Topics are selected by students from a list prepared by academic staff or students may suggest their own topic based on an individual's interest or industrial experience. Projects may be university based or industry based. The project may take various forms in which technology, research and development, experimental work, computer analysis, industry liaison and business acumen vary in relative significance.

MM509 Engineering Mathematics
No. of hours per week: two hours
Assessment: tutorial assignments, practical work and examination
A fifth-year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
This subject aims to round off the student's knowledge of mathematical methods required by practising engineers and to place these methods into perspective through a study of different mathematics structures used in the mathematical modelling of engineering systems.

Section A: Mathematical Methods
Numerical Analysis


Complex Variable

Section B: Mathematical Modelling
The objective of this section of the subject is to develop the students' perspective in applying the diverse mathematical tools and techniques that they have learned in their course to real engineering problems. The focus is on the understanding of the optimum use of analytic methods rather than on the techniques of numerical modelling elsewhere.

Introductory lectures will include an overview of mathematical tools and techniques and their use in mathematically modelling an engineering problem. The emphasis will be on understanding the advantages and disadvantages of different mathematical structures in the solution of engineering problems. For example: Which is the "best" mathematical structure for describing the kinematics and dynamics of robot motion? (Robot motion has been modelled in the literature by at least 10 different mathematical systems.)

In the main part of the section students will be assigned a set of engineering problems, each of which may be solved by using a variety of mathematical methods. The objective is for students to survey the collection of mathematical tools they have accumulated and learnt to use over their course, to determine if there is a "best" solution method, to compare the method with those methods applied by other students, and to generalise their findings to help guide future modelling activities. Students will give a seminar presentation of their comparative results.

References
Section A

References
Section B
Brind, L. Vector and Tensor Analysis, Wiley, 1947
Milne, E.A. Vectorial Mechanics Interscience, 1948
### MM510 Combined Heat and Mass Transfer

<table>
<thead>
<tr>
<th>Subject aims and description</th>
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<tr>
<td>This subject aims to apply the theories of heat and mass transfer to the design of equipment for the operations listed below. Industrial applications of heat and momentum transfer. Diffusional operations: drying, crystallisation, water cooling and humidification. Single and multi-effect evaporator systems; thermal and mechanical recompression. Operation, control and economics of evaporation systems.</td>
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### MM511 Chemical Engineering Design

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<td>This subject aims to acquaint the student with the responsibilities of the professional chemical engineer and some of the issues that may be confronted. A separate segment seeks to consolidate the student's previous work in computer programming by applying it to problems relevant to his/her future career. The syllabus covers: aspects of chemical plant design: formulating the design; the design procedure; flowsheets and their uses in design work; safety and health considerations; economic aspects; plant layout. Computer aided design: the use of software packages for flowsheeting, flowsheet preparation and layout; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.</td>
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### MM520 Engineering Science

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<td>A subject in the fifth year of the degree of Bachelor of Engineering (Mechanical). Three twenty-six hour units are offered: Thermofluid mechanics. energy systems and energy modelling. Students must take two of the three alternatives offered.</td>
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### MM520A Thermofluid Mechanics

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<td>This subject aims to provide students with an opportunity to perseve a number of applied thermofluid areas in depth. The syllabus includes three topics selected from: turbulence theory: equations of continuity and motion for turbulent mean flow; methods of solution. Flow of an ideal fluid: circulation, vorticity, stream function, velocity potential and flow nets, basic flow patterns and combinations of same; aerofoil theory. Low Reynolds number flows: steady laminar flow in pipes and between parallel plates; measurement of viscosity; fundamentals of the theory of hydrodynamic lubrication. Two-phase flows: slurries and particle/carryer gas flows. Supersonic flow: oblique shock waves, subsonic and supersonic combustion ramjets, supersonic inakes.</td>
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<th>Subject aims and description</th>
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<tr>
<td>This subject aims to introduce students to the application of numerical methods to the solution of engineering problems. Students will gain experience in applying finite difference and finite element techniques to selected problems in</td>
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thermo/fluid mechanics where alternative solutions are available from physical measurements or analytical solutions. Objectives will cover modelling accuracy, degree of difficulty, computing time, economic effectiveness in comparison with alternative solutions and relative accuracy of experimental data.

The program includes: introduction to available numerical packages for thermo/fluid modelling. Demonstrate. Select an energy system problem (heat transfer or boundary layer) amenable to solution by a Runge-Kutta technique. Write a suitable numerical model, code and compare to alternative solution. Select an energy system problem suitable for solution with one of the standard packages (e.g. MSC/PAL, NASTRAN, FIDAP, INFERNO). Write a report covering both tasks and addressing the above objectives.

References

MM540C Control Engineering
No. of hours per week: two hours

Subject aims and description
The syllabus includes advanced topics in the analysis and design of engineering control systems. Topics will be offered from the following list:

- Design and compensation of control systems
- Non-linear system analysis by describing functions
- Application of state-space methods
- Stochastic control processes
- Optimal and adaptive control systems

Textbook

References

Random vibration; statistical modelling analysis and measurement. Spectral analysis, analogue and digital methods, filtering, band width, averaging time and error analysis. Response of linear systems to random forcing.

Modal analysis; experimental evaluation of modal data, system identification and modification to meet design specification. Finite element methods, applications packages.

References

MM540B Vibration and Modal Analysis
No. of hours per week: two hours

Subject aims and description
The syllabus includes advanced topics in the theoretical and experimental analysis of vibration in machines and structures.
MM550 Design for Manufacture
No. of hours per week: five hours
Assessment: assignments, project work and examination
A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description
This subject aims to provide additional knowledge of designing tools, machinery and equipment for quality production.

The modules on design of machinery for production and industrial robot design provide the basis for the design and selection of machine tools and robots. Advanced mechanical design and advanced tooling design with CAD applications aim to provide basis for more detailed analysis of design problems with the aid of latest CAD/CAM systems.

References

MM551 Engineering Technology
No. of hours per week: six hours

MM551A Engineering Ergonomics
No. of hours per week: two hours
Instruction: lectures and tutorials
Assessment: assignments
Subject aims and description
This subject aims to provide further studies in topic areas which will enrich the student's knowledge and understanding of ergonomics and design.

Students are expected to research in depth one of the topic areas discussed and to write a technical paper to a standard acceptable for publication in one of the major professional periodicals.

The syllabus covers postural strain and overuse injuries; types, origins, pathology, task design criteria, management strategies for risk control. Overload injuries; types, origins, pathology, task design criteria, management strategies for risk control. System design and developing design strategies for socio-technical systems; physiological and socio factors. Human-computer interaction: input device characteristics: screens, keyboards, mice, graphic tablets, balls, gloves, voice recognition, touch screens, new techniques. Output: screen displays, voice synthesis, printers, character based screens versus high resolution graphics. Computer control versus user control, causes of user anxiety. Control techniques: windows, menus, buttons, command keys.

References

MM551B Engineering Technologies
No. of hours per week: two hours
Instruction: lectures, workshop and excursions
Assessment: assignments and project
Subject aims and description
This subject aims to explore aspects of the design process critical to an industry maintaining a competitive edge in a rapidly developing technological society.


Seminars will be conducted by industrial specialists.

Site visits will be made to local industry.

References

MM551C Equipment Life Cycle
No. of hours per week: two hours
Instruction: lectures, workshops and project consultations
Subject aims and description
This subject aims to introduce students to engineering aspects of equipment life cycle from conception through definition, realisation, integration, commissioning, life usage and ultimate decommissioning/disposal.

The syllabus includes: types of equipment; fixed and mobile equipment acquisition and procurement cycle; major equipment acquisition, minor equipment acquisition, forecasts, budgets and estimates, conception definition and realisation. Design research and development, FMECA and LSA, adaptive design and off-the-shelf design options.

Equipment trailing, testing and demonstration; user requirements, engineering requirements, reliability, maintainability, maintenance and logistic support requirements, trials, tests and demonstration plans and contracting for reliability.

Maintenance strategy:
Types and approaches, preventive maintenance, condition monitoring, on condition maintenance and breakdown maintenance. Maintenance economics and OR/TL. Integration and commissioning process:
Systems management and systems effectiveness, the operational system, the maintenance sub-system, the training and documentation package, ISR and inventory stocking levels, and warrants period.

Maintenance operations:
Maintenance planning and control, work planning, resource analysis and allocation, plant inventories and records. Repair parts scaling and spares assessments. Maintenance activities; repair and performance and condition monitoring, replace, diagnose, isolate, test, calibrate, overhaul, rebuild, rectification, downtime and equipment availability. Maintenance access and creation of maintenance windows. Measures of maintenance effectiveness.

Configuration:
Configuration control and modification. Decommissioning, disposal and system replacement.
MM551D Occupational Risk

Subject aims and description
This subject aims to provide an exposure to topics in occupational hygiene and associated risk engineering methods for those students interested in occupational health and safety issues.

Students are expected to research in depth one of the topic areas discussed and to write a technical paper to a standard acceptable for publication in one of the major occupational health and safety periodicals.

The syllabus covers:
- Occupational hygiene: methods and limitations of sampling and measurement of contaminants, control aspects of occupational hygiene.
- Toxicology: routes of entry, dose-response relationships, threshold level values and other measures applied to chemicals, noise, vibration and radiation.
- Chemical hazards and effects: solvents, dusts, welding fumes, heavy metals, sensitisation, cancer, respiratory and other systemic effect; respiratory protection against dusts, mists and vapours, equipment types, effectiveness and program requirements.
- Radiation: ionising and non-ionising, uses and applications, damage-risk criteria, control methods.
- Biological hazards: Legionnaire’s disease, zoonoses, AIDS, bacterial infection, principals and control.
- Engineering risk control for external energy sources, mobility of energy source and recipient, passive and active control, organisational requirements for control.
- Engineering risk control for internal energy sources, principals or organisational and technical controls.
- Application of event synthesis techniques; machines, processes.
- Application of event analysis technique to a class of events, application of fault tree analysis, machines, processes capable of experiencing that class of events.
- Machinery safeguarding design: legal principals and requirements, design methodology.
- Isolation procedures and work permit systems; definitions, isolation and work permit procedure components, factors influencing design, reliability of procedures.
- Electrical safety: effects of electricity on the human body, MEN electrical system, earth leakage circuitry breaker and applications, EMF, spectral characteristics, effects on human body elements.
- Fire and explosion: principles and practices, ignition sources, fuels, fire loading computations, detection and control, codes of practice.

References

MM551F Technology Modelling

Subject aims and description
This subject aims to introduce student to the methodology and techniques for developing computer models in diverse engineering technology disciplines.

Areas to be covered will be selected from: engineering software design, systems effectiveness, risk modelling, and expert systems in engineering.

The syllabus includes:
- Engineering software design
  - Topics: software design process, Human computer interfaces, computer generated sound, window, buttons, menus, icons, navigation, help, hypertext, search techniques, use of colour, screen layout.
  - Computer manual design. Students will use a high level software construction kit to generate an ergonomically sound piece of engineering software.
- Emphasis will be on high level design concepts.

- Expert systems in engineering
  - Topics: the nature of expert systems. Applications of expert systems to engineering, Knowledge bases, inferencing, forward and backward chaining, rule set partitioning. Rule and frame based systems, Lisp and Prolog.
  - Students will use an expert system shell to generate a run-time expert system which captures some element of real engineering expertise.

- Systems effectiveness
  - Topics: the nature of systems effectiveness; systems effectiveness verses cost effectiveness; systems modelling, model elements and their interrelations. Factor affecting system effectiveness; management organisation utilisation, reliability, maintainability, configuration, environment, logistic support and administration. Optimisation of systems effectiveness; reliability growth management, configuration management, system modification and systems effectiveness growth management.

- Risk modelling
  - Topics: the nature of risk modelling and simulation. Use of personal computers and software programs. Transfer of real world data into computer simulations and models. Types of available simulation, distributions and optimal choices for specific modelling needs. Advanced simulations with graphical interpretation of results. Communication of conclusions to management.
Students will use state-of-the-art simulation software to thoroughly explore situations taken from current industrial challenges. They will be responsible for all stages of the project, starting from the basic definition of the problem, and following right through to the final managerial report.

References


MM56 Reactor Design

No. of hours per week: two hours
Assessment: examination

A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description

This subject aims to give students a basic understanding of the principles involved in the design of batch and continuous reactors, and to specifically study the operation of small scale batch plant as used in many Australian industries.

Reactor design — a review of chemical reaction, kineamatics, flow kinematics of various reactor types including batch, tubular and CSTR, temperature and pressure effects on reactor performance. Adiabatic and isothermal operation. Gas and liquid phase reactions. Heterogeneous operations.

Batch processes — unsteady state operation of chemical plant with examples including batch distillation, batch drying, batch filtration, batch reactors and batch leaching and absorption, solvent extraction, ion exchange, semibatch operation.

Textbooks


Levenspiel, O. Introduction to Reaction Engineering

MM570 Manufacturing Technology

No. of hours per week: five hours
Assessment: assignments and tests

A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description

This subject aims to complete the work commenced in MM472. In the plasticity section emphasis is placed on the analysis of hot working techniques and on load bounding methods. The automation section emphasises the techniques applied in automation and the use of industrial robots and the plastics and rubbers section completes the development of these techniques.


Textbooks


MM580 Management Practices

No. of hours per week: three hours
Assessment: examination, assignment and class participation

A fifth-year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description

This subject aims to address the key issues for managing productive and innovative engineering environments and to provide further elective study in management practice areas of prime student interest.

This subject includes managerial concepts and practices that engender a co-operative working environment required for ‘World Class’ productive and innovative engineering. It consists of a compulsory core in which the key elements for managing productive and innovative (typically that associated with research and development) environments are studied.

Students then select an elective from one of the following:

- Engineering leadership; project management; research and development management; risk management; occupational health and safety management; maintenance management; informatics management; production management.

Elements of a productive environment: the working environment; factors contributing to work performance, structures of control, alternative social relations of production, managerial goals and organisational structure; impact of technology on work, social environment, occupational health and safety. The engineering environment; optimisation of a system of technology and people for maximising the desired engineering outcomes; new applications of technology, socio-technical systems analysis for specification, selection and implementation of total technical and working environment requirements.

Job design to sustain co-operative and productive engineering environment; perspectives of the labour process and factors contributing to the design of jobs, needs and policies in the recruitment and selection of achievers, socio-technical analysis and design of optimum engineering system and people combinations.

Elements of an innovative environment: relationship between work design and engineering innovation (e.g. flexible specialisation). Managing change; understanding the psychology of change, specifying, designing, planning, negotiating and implementing change. Managing innovation; social dimensions of creativity, invention and technology; technological diffusion and economic analysis of innovation.

References


MM581 Manufacturing Systems Modelling
No. of hours per week: two hours
Assessment: assignment, projects and exam
A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).
Subject aims and description
This subject aims to introduce modelling concepts, techniques and solutions applied to manufacturing systems as tools in identification, structuring and analysis of problems leading to real decision making.
The syllabus covers: modelling concept, classifications; optimization models applied to resource allocation, networks, capacity planning, maintenance, assembly lines; introduction to a commercial LP/NLP package and its application to some cases; stochastic models, applications in reliability, maintenance, markovian analysis; simulation modelling: concept, benefits, applications, languages, packages; introduction to and applications of a commercial simulation package (simfactory); statistical analysis, reliability modelling.

References
Neelamkavil, F. Computer Simulation & Modelling. Chichester: Wey, 1987
Williams, H.P. Model Building in Mathematical Programming. 3rd ed, Chichester: Wey. 1990

MM582 World Class Manufacturing Systems
No. of hours per week: two hours
Assessment: project work or assignment, exam
A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).
Subject aims and description
This subject aims to understand the current trends in manufacturing via thorough investigation of content, relevance and interrelationships of: JIT, TQC, quality circles, maintenance, reliability. Discussions to be supported by outside lecturers, video and seminars.
The syllabus covers:
Theory Z: management style resembling the Japanese approach towards management, productivity through employee involvement, trust and respect for the individual, implicit control.
VAM: concept/philosophy, definitions, planning, implementation.
JIT: concept, elements/levels, comparison with traditional method, requirements, training, government participation.
TQC: concept, management improvement. employees attitude, environmental implementation.
Quality circles: people's participation in problem solving, management attitudes, scope of problem, levels of circle, training, approaches, examples.

References

MM583 Industrial Management
No. of hours per week: four hours
Assessment: assignments and examination
A fifth-year subject in the degree of Bachelor of Engineering (Manufacturing).
Subject aims and description
The aim of this subject is to provide knowledge of contemporary management principles and practices by presenting specific material which builds upon the subject matter presented earlier in the course; a further aim is to assist the effectiveness of graduates in supervisory roles in industry. Appropriate computer packages to be used to solve problems.
Topics covered include: business strategy, setting of objectives, theories and practice; supervision and leadership, motivation, finance, payment systems, management development and personnel appraisals, legal.

References

MM604 Design for Manufacture
No. of hours per week: four hours
Assessment: assignments, project work and examination
A subject in the Graduate Diploma in Manufacturing Technology.
Subject aims and description
Design for Manufacture aims to provide students with good knowledge of designing tooling, machinery, equipment and systems used for quality production.
Design of tools for metalworking: cutting tools, high removal tools, single points, multipoint and special form tools design.
Design of dies for sheetmetal work: blanking, bending, deep drawing dies design.
Dies and fixtures design: locating, clamping and other elements design. Dimensional analysis: calculation of locating errors.
Kinematics of non-uniform motion: theory and practice — design of cams and cam followers, linkages design.
Automation of production: logic circuits, pneumatic circuits and electropneumatic circuits design. Circuits design with PLCs, hydraulics, introduction to robotics.
Major project: automation of manual tasks; thirteen weeks duration.

Textbook

References
American Society of Tool and Manufacturing Engineers (ASTME), Handbook of Jig and Fixture Design. 2nd ed. Dearborn: Society of Manufacturing Engineers, 1989

MM605 Design for Manufacture
No. of hours per week: four hours
Assessment: assignments, project work and examination
A subject in the Graduate Diploma in Manufacturing Technology.
Subject aims and description

The subject as the second part of Design for Manufacture aims to prepare students with further knowledge of design of tooling, machinery and systems for quality production.

Tooling design for metalworking: economy and batch quantity, relationship. Tool design for cold and hot forging, and diecasting.


Computer aided design: CAD Systems, processing and techniques. NC programming, kinematics and robotics.

References


MM606 Manufacturing Technology

No. of hours per week: five hours

Assessment: assignments and tests

A subject in the Graduate Diploma in Manufacturing Technology.

Subject aims and description

Sheetmetal work: presses; classification, drive systems and mechanisms, evaluation of different types, operation, applications, selection. Press feed mechanisms; types, advantages and disadvantages, applications. Die cushions. Bending of sheetmetal; analysis of die types, forces, recoil, springback, blank development. Deep drawing; planning, force requirements, variables, effects of clearance, cutting with shear, stripping force. Materials selection for press forming; general requirements, mechanical tests, tensile test, analysis of stress-strain curves and parameters, r and n values, tests to simulate processes, stretch forming tests, deep-drawing tests, bending tests, forming-limit diagrams, applications. Function and terminology for die components; blanking dies, commercially available die sets, punches and accessories.

Numerical control; introduction to NC machine tools, comparison with conventional, hardware configurations, software implementation, control systems, machine control unit, feedback, sensitivity. NC system components; comparison of actuation systems, electric, hydraulic, pneumatic. Design considerations for NC machine tools; design differences between conventional and NC machines, mechanical design considerations, control system design considerations. System input/output; types of input media, symbolic codes, tape input format, communication with MCU. NC programming: programming methods, computer assisted NC programming [processors, post; processors], part programming languages — APT. Computer Numerical Control (CNC), Direct Numerical Control (DNC); comparison, management implications.

Plastics and rubbers; overview of processes. Melt forming, rheology, mathematical analysis of pseudoplastic, dilatent, Newtonian flow, time dependant flow, thixotropy, viscosity, tracional viscosity. Extrusion defects; causes and prevention. Extrusion die design. Single and multiple screw extrusion; hardware and product characteristics. Injection moulding; mould design, basics of the moldflow philosophy, cooling systems. Thermoforming die design. Elastomers; C black, other additives, compounding. Compression and injection moulding.

Textbooks


References


MM607 Manufacturing Technology

No. of hours per week: five hours

Assessment: assignments and tests

A subject in the Graduate Diploma in Manufacturing Technology.

Subject aims and description

Mathematical analysis of forming: equilibrium analysis of common working processes, e.g. wire drawing/strip drawing/extrusion/tube drawing/forging. Redundant work, friction and lubrication.

Deformation mechanics: slip line field applied to forming problems — metal flow.


Textbooks


Roe, G. Elements of Metalworking Theory. London: Edward Arnold, 1979

MM608 Manufacturing Technology

No. of hours per week: five hours

Assessment: assignments and tests

A subject in the Graduate Diploma in Manufacturing Technology.

Subject aims and description

Automation and automated assembly: CAM, CAD, manufacturing systems. NC robots feeding orientation and placement.


Hot working: revision of background metallurgy. Stress, strain and strain rate rules. Friction and lubrication. Tool materials. Analysis of processes,
Polymer processing — comparison of techniques of polymer processing, e.g., extrusion, injection moulding, thermoforming and blow moulding for the production of particular components. Selection and costing with the optimisation of the use of the materials. Comparison of thermoset versus thermoplastic materials using elastomers and examples.


Textbooks
Rae, G. Elements of Metalworking Theory. London: Edward Arnold, 1979

MM611 Introduction to CAD
No. of hours per week: two hours
Assessment: assignments and examination

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
This subject aims to introduce the fundamentals of computer graphics, computer aided design, and geometric modelling systems.


CAD implementation. Review of micro, mini and mainframe CAD systems: applications, capabilities and limitations.

CAD and its relationship in a totally integrated manufacturing process.

Designing a simple 2D CAD system using fundamental programming skills.

References

MM612 CAD Practice
No. of hours per week: four hours
Assessment: assignments and projects

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
This subject aims to provide hands on experience on computer aided design and geometric modelling software, its capabilities and applications.


References

Instruction Manuals: CATIA package

MM613 Micro CAD
No. of hours per week: two hours
Assessment: assignment

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
This subject aims to introduce the students to micro computer aided design, its capabilities as a design/drafting tool and its limitations.

Introduction to micro CAD hardware, file maintenance and computer screen layout. Practical work on 2D and 3D, mainly in the area of graphic element generation e.g., points, lines, circles, cylinders planes, etc. Utilities for image manipulation e.g., zooming, panning, copying, mirroring etc. Generation of packed elements such as symbols, subparts etc. Other micro CAD facilities for comprehensive image presentation e.g., dimensioning, hatching etc.

Advance capabilities of micro CAD systems in parametric design and CAD/CAM facilities.

References

MM614 Automation and Machining
No. of hours per week: two hours
Assessment: examination and assignments

A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology (CIM).

Subject aims and description
This subject aims to develop an understanding of machining technology and conventional automation and also the relationships between these technologies and advanced manufacturing technology.

Rationales for automation. Overview of conventional automation in machining.

Approaches to conventional automation — pneumatics, hydraulic, electric, electronic, hybrid systems.

Machining technology: Machine costs and time estimates, economics of machining, including computer techniques: tool life, effects of parameters including depth, feed, cutting force, tool geometry, temperature, cutting fluids; single and multiple cuts. Establishing cutting conditions and workholding locations.
MM615 Manufacturing Automation
No. of hours per week: two hours
Assessment: examination, assignments and laboratory reports
A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology (CIM).

Subject aims and description
This subject aims to develop an understanding of aspects of numerical control and its relationships with other advanced manufacturing technologies.
Numerical control — comparisons with conventional electronics in machining. Types of control — NC, CNC, DNC, DDNC. Open and closed loop systems. Adaptive control. Multiple axis machine systems, profile cutting, applications in various industry types.
Economics of NC.
Introduction to automated assembly,
Laboratory sessions: NC milling, NC turning. CATIA/NC programming, postprocessing and link.

Textbook

MM616 Manufacturing Automation
No. of hours per week: two hours
Assessment: examination, assignments and laboratory reports
A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
The subject is intended to provide an understanding of the use of automation and expert systems in manufacturing.
Flow lines and flow line balancing: transfer mechanisms, analysis of flow lines, flow line balancing, computer simulation of flow lines.
Automated inspection systems — co-ordinate measurement machines (C.M.M.).
Expert and knowledge based systems: discussion of relevance and characteristics of expert/knowledge based systems.
Laboratory: practical work relating to programming co-ordinate measurement machines (C.M.M.), programmable logic controllers (P.L.C.) and industrial robots.

References
Further references will be supplied by the lecturer.

MM617 Introduction to Computer Integrated Manufacture
No. of hours per week: two hours
Assessment: assignments and examination
A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology (CIM).

Subject aims and description
This subject aims to provide the student with an appreciation of the breadth of computer integrated manufacturing — as such, it establishes the context for all other subjects taken in completing the course.
Computer aided design (CAD): application of computers in engineering design.
Computer aided manufacture (CAM): the role of numerical control (NC) in CAM, CNC, DNC, manufacturing planning and control systems — MRP, MRPII, CAPP and shop floor control systems.
Group technology and flexible manufacturing: application of group technology in cellular type flexible manufacturing, definition of flexible manufacturing systems (FMS) and discussion of various aspects of flexibility.
Computer integrated manufacturing (CIM): definitions, integration of elements of CIM via common data bases, data base management systems, relationship between FMS and CIM.

References

MM618 Introduction to Robotics
No. of hours per week: two hours
Assessment: assignment work/lab reports and examination
A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
The subject is intended to provide an understanding of the use of robots in increasing manufacturing productivity. The basic terminology used in robotics is explained and the factors affecting the implementation of robotics in industry discussed.

- Robot definitions, classifications, specifications and characteristics.
- Robot hardware elements: drive systems, controllers.
- Robot end effectors: gripper design, choosing an end effector.
- Robot sensor systems: vision, force and torque sensing systems.
- Robot applications: machine tending, spray painting, robot welding and assembly.
- Technical and financial evaluation of robotic installations.
- Organisational effects of 'robotisation'.

References
MM619  NC Project
No. of hours per week: four hours
Assessment: assignments, class participation, final report and presentation

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
This subject aims to familiarise students with the use of modern NC equipment, robots and CAD systems for solving practical engineering problems.

Individual or group project involving co-ordinate measuring equipment and modelling, NC machining and robotic tasks and advanced CAD systems for the design of more complex parts and producing models or dies for net shape manufacturing processes, injection moulding or other processes.

References
The same as for Introduction to Computer Aided Design, Micro CAD and CAD Practice

MM620  Computers and Interfacing
No. of hours per week: two hours
Assessment: project/seminar work and examination

A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology.

Subject aims and description
This subject aims to introduce students to the basic principles of digital computer architecture, the connection of computers to physical closed loop control systems.

Boolean algebra, number systems, Karnaugh mapping techniques, state machines and microprocessor based systems. Memory mapping (addressing) techniques and computer architecture. Design of buffering and signal conversion circuits for interfacing. Students are required to provide a major seminar in conjunction with relevant project work.

Reference

MM621  Mathematics
No. of hours per week: two hours
Assessment: assignments and examinations

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
The aim of this subject is for students to develop an understanding of mathematical and statistical techniques for computer applications.

Matrix and matrix algebra — orthogonal matrices, real symmetric matrices and applications. Solution of a homogeneous system of linear equations.

Initial value problems: Runge-Kutta.

Introduction to finite difference methods of ordinary and partial differential equations.


References

MM622  Advanced Computer Techniques
No. of hours per week: two hours
Assessment: project and assignment work, examination

A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology (CIM).

Subject aims and description
This subject aims to provide students with the skills necessary to undertake structured program development.

Structured programming in Turbo PASCAL
- control structure (sequence, repetition, conditionals)
- recursion
- user-defined data types
- procedures and functions
- arrays, records
- files
- program documentation
- dynamic data structures
- development of units for large scale program development

Textbook
Savitch, W. Turbo Pascal 5.5. Benjamin Cummings, 1990

MM623  Computer Based Management Systems
No. of hours per week: two hours
Assessment: assignment and project work, written test

A subject in the Graduate Diploma in CAD/CAM, Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology (CIM).

Subject aims and description
The subject is intended to provide a grounding in the application of computers to the management and control of a manufacturing enterprise. Particular emphasis is placed on practical familiarisation with available software packages and evaluation of their applicability to particular cases.

A proportion of the subject is devoted to MRPII packages. Further topics include project management including CPM/PERT and investment decision, simulation, decision making and total maintenance system.

References
Micro MFP Inc. MAX Manual

MM624  Management of CAD/CAM Technology
No. of hours per week: two hours
Assessment: assignment and project, written test

A subject in the Graduate Diploma in CAD/CAM.

Subject aims and description
Discussion of the new business environment, introduction to managerial issues specific to CAD/CAM environments in adoption, design, control. Industrial relations concerning people, government, unions, others.

Introducing technological change related to CAD/CAM, project planning, management, maintenance agreements, installation and commissioning.

Impact of CAD/CAM on the organisation, industrial relations implications, ergonomics and occupational health and safety issues, training for CAD/CAM, approaches to CAD/CAM, government initiatives relating to CAD/CAM, support organisations.
**References**


**Subject aims and description**

The aim of this subject is for students to develop an understanding of conventional and modern technologies associated with manufacturing automation.


Characteristics of transducers: dynamic properties of transducers — zero, first and second order transducers; NOISE.


Adaptive control: adaptive control of machine tools, parameters used for adaptive control, block diagrams.


**References**


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**MM627 Manufacturing Management Systems**

No. of hours per week: two hours

Assessment: assignment/examination

A subject in the Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology.

**Subject aims and description**

This subject aims to provide an understanding of the manufacturing management systems.

An overview of manufacturing management functions, organisation, data flow, control etc.

Traditional approaches are followed by an overview of the current world market characteristics leading to needs for flexibility in all aspects. Role of technology and approaches such as MRPII, just in time, CPT are discussed in detail.

**References**


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**MM628 Control Systems and Devices**

No. of hours per week: two hours

Assessment: laboratory/examination

A subject in the Graduate Diploma in CIM, Master of Engineering in CIM, Master of Technology.

**Subject aims and description**

This subject aims to consolidate the students' prior learning and experience in the application of classical closed loop control systems; to provide an understanding of those factors determining stability and dynamic performance; to provide an appreciation of modern adaptive control theory and application.

Introduction to closed loop control and applications in integrated manufacturing. Classical treatment of feedback control is extended to include the analysis of non linear systems.

Applications include chatter and instability in machine tools and manufacturing processes.

Masters by coursework students are required to complete a research assignment in the area of modern control of multivariable processes.

**References**

Dransfield, P. Systems and Control, Parts 1 and 2. Monash University, 1988


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**MM629 Computers and Interfacing**

No. of hours per week: two hours

Assessment: project/seminar work and examination

A subject in the Graduate Diploma in CIM, Master of Engineering (CIM) and Master of Technology.

**Subject aims and description**

This subject aims to provide a sound understanding of computer interfacing through data communications techniques as they apply to manufacturing.

Data conversion from internal to external representation. Parallel and serial external communications techniques. Distance limitations, noise induction. RS-232 and RS-449 circuits and problems. Network topologies and protocols.
Students are required to provide a major seminar in conjunction with project work.

**References**


**MM630 Mathematics and Computing**

**Subject aims and description**

This subject aims to develop an understanding of mathematical and statistical techniques for computer applications; to introduce students to common computer operating systems and their development environments, and to common end-user software.

**Maths**

Statistics and operations research:

- Linear programming: simplex method, big M method, two phase method, duality, dual simplex method, sensitivity, revised simplex technique, bounded variables, parametric programming, decomposition, applications, use of computer packages such as SAS/OR, industrial applications.
- Multiple linear regression: review of linear regression with one predictor.

**Computing**

- Introduction to computer organisation
- DOS — command interpreter; windows environment
- end-user software — spreadsheets; graphics packages

**References**


**MM631 Machine Systems**

**Subject aims and description**

The aim of this subject is for students to develop an understanding of software and hardware aspects of CIM systems.

Development of N.C. and robot programming languages: online and offline programming of N.C. machines and robots.

Levels of programming: manipulator, object and objective levels of programming.

Development of a universal programming language: the implications.

Material handling systems in FMS/CIM: robots in material handling, automated guided vehicles (AGV) — control and implementation, automated warehousing — description of hardware, integration with other elements of automated material handling system.

Expert and knowledge based systems: description of elements, knowledge and problem representation in an expert system, use of expert system 'shells' and commercial systems, development of expert systems including prototyping, role of expert systems in machining.

**References**


Further references will be supplied by lecturer

**MM632 Computer Aided Design**

**Subject aims and description**

This subject aims to introduce theoretical foundations of computer graphics and CAD systems and provide hands on experience in microCAD 3D systems.


Practical section: Further hands on micro CAD system with 3D modelling and introduction to micro CAD/CAM.

**References**


**MM633 Advanced CAD**

**Subject aims and description**

This subject aims to introduce advanced topics of CAD and related theory, review various CAD systems and provide hands on experience in advanced 3D geometric modelling system.


Hands on advanced 3D geometric modelling systems: wireframe, surface, solid modelling. Complex surfaces and splines. NC cutter path determination and verification using post-processor.
References

MM689 Minor Thesis
No. of hours per week: sixteen hours
Assessment: continuous assessment of work and participation/final report and presentation.
(Assessment will be in accordance with the regulations and marking scheme handed out to students when projects are approved)

A subject in the Master of Technology CIM.

Subject aims and description
This subject aims to give the student the opportunity to apply the subject matter studied in the other course subject to CIM related problems in his/her specific field of interest. Where possible the problems should be industry sponsored and have direct relevance to the student's area of employment.

Students will work on approved problems under staff supervision. External supervisors may also be appointed. Each project will require a literature survey and a theoretical and/or experimental investigation.

Results and conclusions will be presented in a written report and oral presentations to selected audiences will be required to accustom the student to giving oral progress reports on a major project.

MM710 Introduction to Risk
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to introduce the philosophy and the terminology concerning the idea of risk, understand the nature of human perception and experience of risk and introduce techniques in the analysis of risk related incidents.

Risk terminology and system modelling: nature and origin of uncertainty; phenomenology of risk and the application of the scientific method; risk measurement; concept of causation; objectivity and subjectivity related to risk occurrence; types of risk: voluntary and involuntary.

Introduction to risk modelling: description of models for risk analysis: the Heinrich model; risk psychological models; energy damage model and the generalised time sequence model.

Human perception of risk: human response to uncertainty; terminology and concepts: social cognition, perception; personal and social attribution with regard to risk; attitudes and attitude change; motivation; theory of cognitive dissonance.

Group dynamics in relation to personal risk situations.

References

MM711 Quantitative Risk
No. of hours per week: two hours
Instruction: lectures, tutorials and workshops
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
The course of study introduces students to the nature of statistical methods and develops skill in application of the various methods.

Descriptive statistics. Nature of variables, frequency, distribution, mean, median, mode, normal curve, variance, standard deviation. Exploratory data analysis, data distribution and specification, ranges and interpretation. Distributed data representation, data plots as histograms, polygons and relative frequency histograms. Applications to risk management.

Inferential statistics. Significance testing, null hypothesis, comparison of data sets; interpretation of distributed data, samples and populations, confidence levels, variance analysis, chi-square testing. Applications to risk management.

Probability. Basic theory; probability of success and failure, addition and multiplication theorems, permutations and combinations. Exponential distributions; reliability, reliability function, MTBF: failure rate, failure analysis, characteristics of exponential distributions.

Systems reliability; series and parallel reliability, mission profile, failure patterns, complete system reliability function. Weibull distribution; analysis of uncensored reliability data, use of Weibull graph, interpretation of results. Analysis of censored data. Binomial distribution; characteristics of binomial random variable, binomial distribution, general case. Poisson distribution; characteristics of Poisson random variable, Poisson distribution, general case, relationships to the binomial distribution. Applications to risk management.

References

MM712 Risk Law
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

subject aims and description
This subject aims to provide an introduction to principles of health and safety law and the related legal obligations of people.

Historical outline of the development of health and safety law and doctrines: common employment, contributory negligence and voluntary assumption of risk.

Common law principles in the areas of occupation, public and product health and safety; duty and standard of care; tests of negligence.

Legal relationships involving employers, employees, manufacturers and suppliers, service providers, consumers and occupiers.

The role of the Australian Federal Government in health and safety legislation.

Subject aims and description

This subject aims to further develop principles and techniques of management objectives. Overview of management models: process model, assets, vulnerabilities, exposure and threats model, functions and activities model; risk control principles and practice; decision making. Insurance: the history and role of insurance, principles of insurance: contents, claims estimates, premium determination, types of premiums, re-insurance, the role of brokers; liability insurance concerning products, employers, employees and the public. Professional indemnity: contract types and administration catastrophic loss insurance: contract types and administration; captive insurance organisations, self insurers, bank guarantees.

References


MM712 Risk Analysis

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description

This subject aims to further develop principles and techniques of risk assessment, analysis and control. Historical overview of health and safety within society; pre-scientific attitudes to causation and early scientific approaches to risk analysis. Risk analysis and use of modelling: application of risk estimation, psychological, energy damage and generalised time sequence models. Risk diagrams and analysis of risk related data; recording of data. Occurrence investigation: the objectives and training requirements.

Information systems: classification, analysis and use of data.

References


MM715 Risk Engineering

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description

This subject aims to provide students with further experience in the application of risk estimation and analytical techniques. Risk estimation and loss rate concept. Risk diagrams and risk modelling principles. Risk modelling using computer simulations. Outcome analysis and event trees. Fault tree analysis: techniques and applications. Failure modes and effects analysis and methodology. Sources of risk data — probability, failure and reliability. Hazard and operability studies.

References


MM716 Risk Evaluation Principles

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description

The aim of this subject is for students to understand the application of risk evaluation and decision making within human social structures and the implications for human organisation activities. Risk evaluation and the role of decision making: problem solving and decision making; case studies; personal and small group risk evaluation principles; the balance between risk benefits and costs (including disbenefits); acceptability of risk; basis upon which people respond to risk situations; controllability of risk; control techniques and trend analysis. Human social organisations: fundamentals of human social organisation; nature and operation of groups; nature and experience of risk within groups; organisational behaviour in situations of change.

References


MM718 Financial Risk Management

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description

This subject aims to further develop a practical understanding of how risk may be effectively managed, and how this relates to the various financial structures within the country. Risk management systems: organisational and national structures, crisis management systems, and assessment of organisation effectiveness; types of financial risk; financial instruments and their use; the timing of financial risk; tax...
effects associated with financial risk; cost benefit analysis principles and techniques; forecasting techniques; project financing.

Reference

MM740 Instrumentation and Measurement Systems
No. of hours per week: two hours
Assessment: assignment, laboratory and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to give a basic foundation in the principles and practice involved in instrumentation and measurement systems used in the chemical industry.

Principles and role of sensors for the measurement of displacement, time velocity, force, pressure, flow-rate, density and temperature. Transducing elements for conversion among mechanical, thermal and electrical quantities, including examples of electro-mechanical, capacitance, piezoelectric, resistance, inductance, and thermo-electric transducers.

Analysis of the static and dynamic performance of electro-mechanical transducers, input-output characteristics of transducer; compatibility of transducers, amplifiers, measuring circuits and recorders in measuring systems.

Applications of digital measurement techniques, digital type transducers, digital to analogue and analogue to digital conversions, data transfer and communications between microcomputers.

References

MM741 Control Engineering
No. of hours per week: two hours
Assessment: assignment and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
An introduction to classical methods of analysis for linear control systems.


Textbook
Dransfield, P. Systems and Control, Parts 1 and 2. Monash University, 1988

References

MM755 Equipment Life Cycle
No. of hours per week: two hours
Assessment: project
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to introduce students to engineering aspects of equipment life cycle; from conception through definition, realisation, integration, commissioning, life usage and ultimate decommissioning/disposal.

Types of equipment; fixed and mobile: equipment acquisition and procurement cycle; design research and development; equipment trialling, testing and demonstration.

Maintenance strategy: types and approaches, preventive maintenance, condition monitoring. Integration and commissioning process.

Maintenance operations: maintenance planning and control, work planning, resource analysis and allocation, maintenance activities, repair and performance and condition monitoring. Maintenance access and creation of maintenance windows. Measures of maintenance effectiveness.

Configuration: configuration control and modification. Decommissioning, disposal and system replacement.

Textbooks
To be advised

References
Byrth, W.J. and Masters, P.R. The Australian Manager. 2nd ed. Melbourne: MacMillan, 1982
Dhillon, B.S. and Reche, H. Reliability and Maintainability Management. N.Y.: Von Nostrand Rheinhold, 1985

MM756 Chemical Engineering Design 3
No. of hour per week: two hours
Assessment: examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to give students a basic understanding of the principles involved in the design of batch and continuous reactors, and to specifically study the operation of small scale batch plant as used in many Australian industries.

Reactor design — a review of chemical reaction kinetics, flow kinematics of various reactor types including batch, tubular and CSTR, temperature and pressure effects on reactor performance. Adiabatic and isothermal operation. Gas and liquid phase reactions. Heterogeneous operations. Batch processes — unsteady state operation of chemical plant with examples including batch distillation, batch drying, batch filtration, batch reactors and batch leaching and absorption, solvent extraction, ion exchange, semibatch operation.

Textbooks
Levenspiel, O. Introduction to Reaction Engineering
MM810 Risk Engineering Science
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to introduce scientific principles concerning the interaction of humans with their environment and the performance of physical materials, as contributing factors to situations of risk.

Ergonomic principles; physical environment influences on human performance due to noise and lighting; cognitive psychology: concepts, displays and controls; error and reliability, workplace design requirements; basic anthropometry, human anatomy and physiology, injury causation due to material handling, slips, trips and falls.

Material science principles: nature and property of metal and polymer materials; fundamentals of corrosion; material failure due to overload, fatigue and corrosion; mechanisms of wear and principles of lubrication.

Energy principles: the nature of fire; brief introduction to terminology of force, stress, pressure; application to fluid flow.

Environmental principles.

References

MM811 Management Practices (Health and Safety)
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to provide an introduction to the terminology and principles influencing the practice of risk management in practical areas of health and safety.

The syllabus will comprise a common unit applicable to all three streams of health and safety, plant and practice, and maintenance, followed by a unit covering specific management practice topics applicable to health and safety.

Common unit: loss forecasting and estimation; the structure of loss data management systems; review of risk identification principles: data surveys, work-group input, computerised data bases; data interpretation and reporting; review of risk interpretation techniques, management program audit and assessment processes.

Health and safety management practices applied to plant and property: identification of property damage and business interruption exposures. Loss forecasting and estimation methods concerning fire and explosion, and machinery breakdown; risk control strategies, highly protected risk and their management, management of normal plant and property operations, management of plant emergency conditions, management of property recovery processes.

References
Other literature to be advised

MM812 Risk Management Practices (Plant and Property)
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to provide an introduction to the terminology and principles influencing the practice of risk management in practical areas of property and production.

The syllabus will comprise a common unit applicable to all three streams of health and safety, plant and practice, and maintenance, followed by a unit covering specific management practice topics applicable to health and safety. Common unit: loss forecasting and estimation; the structure of loss data management systems; review of risk identification principles: data surveys, work-group input, computerised data bases; data interpretation and reporting; review of risk interpretation techniques, management program audit and assessment processes.

Management practices applied to plant and property: identification of property damage and business interruption exposures. Loss forecasting and estimation methods concerning fire and explosion, and machinery breakdown; risk control strategies, highly protected risk and their management, management of normal plant and property operations, management of plant emergency conditions, management of property recovery processes.

References
Other literature to be advised
and improvement; diagnosis and trouble shooting; maintenance facilities; maintenance management and control.

References

MM814 Risk Technology (Health and Safety)
No. of hours per week: two hours
Instruction: lectures and visits
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to develop safety engineering skills relevant to health and safety issues.

Technology and practices in the safe operation and use of hazardous chemicals storage, handling and transport, machinery and tools (e.g., power presses, woodworking, metalworking, construction equipment), with particular reference to guarding requirements. Compressed fluids storage and transport, piping and tankage requirements, vehicles (fork lift trucks, mobile equipment, trucks and heavy transport), lifting equipment (cranes, slings, hoists), stairs, steps, ladders, walkways, platforms.

Personal protection equipment: selection, implementation and use.

Emergency equipment and procedures: breathing apparatus, gas and smoke detection devices, procedures design and maintenance.

Particular industry practices.

References
- Australian Standards and Codes of Practice
- Papers from the literature
- Various government, industry association and union publications

MM815 Risk Technology (Plant and Property)
No. of hours per week: two hours
Instruction: lectures and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to develop the use of standards concerning natural and industrial hazards.

Historical development of standards; use of design principles to prevent loss; human element factors in risk management programs; risk management simulations and applications. Development of skills and techniques to identify and control particular hazards endemic to property loss.

Fire: flame, heat and smoke detection, extinguishing systems; water, CO₂, dry chemical, halon and foam, water sprinkler system design. Australian and US standards and codes.

Explosion: detection and suppression, dusts, boilers and pressure vessels, gas trains.

Flammable substances: handling and storage, Victorian and Australian Regulations.

Protection against natural hazards: floods, wind, storms, earthquakes and fire.

Protection within the confines of industry: heating and electrical systems.

References
- Code, AS1940 Flammable Liquids Code, AS1596 LP Gas Code
- Dangerous Goods Act (Storage and Handling) Regulations 1989, Victorian Government Printer
- Factory Mutual System, various data sheets
- National Fire Protection Association, various Codes of Practice

MM816 Risk Technology (Maintenance)
No. of hours per week: two hours
Instruction: lectures, seminars and site visits
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to provide an overview of maintenance practices and technologies used to predict plant performance reductions from the onset of damage and to introduce methods used to improve operating performance through monitoring procedures.

Designing a maintenance program, selection procedures and parameters.

Monitoring systems, performance and condition for thermography, noise, vibration power, efficiency.

Noise control, sound measurement and analysis, sound propagation predictions, acceptability and standards, noise reduction methods.

Vibration control, vibration measurement, analysis and control, machinery balancing.

Computer modelling, language and program structure, algorithms and flow charting, modelling real systems.

References
- Thompson, WT. Theory of Mechanical Vibrations Unwyn, 1987

MM817 Risk Research
No. of hours per week: two hours
Instruction: lectures, group work and tutorials
A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims for students to develop skills and techniques for conducting and reporting on research in the field of risk management.

Research methodology and orientation.

Resource gathering techniques; data acquisitions and analysis.

Use of library as resource centre.

Research communication techniques.

References
MM818  
*Risk Engineering Science (Health and Safety)*

A subject in the Graduate Diploma in Risk Management.  
**Subject aims and description**

This subject aims to extend the MM810 introductory work in practical applications as indicated below.

- Engineering risk control for external and internal energy sources.
- Application of the event synthesis technique to a class of events and of the fault tree analysis to a typical machine or process.
- Justification, priority setting and work scheduling for risk control tasks.
- Machinery safeguarding design, legal principles and requirements, design criteria, codes and standards, process of design of safeguards.
- Isolation procedures and work permit systems, definitions, components, procedure design reliability.
- Work procedure design, principles of design, practicability and legal criteria, reliability and behavioural control measures.
- Electrical safety, MEN system, earth leakage systems, EMR effects, static electricity.

**References**


MM819  
*Risk Engineering Science (Plant and Property)*

A subject in the Graduate Diploma in Risk Management.  
**Subject aims and description**

This subject aims to extend the MM810 introductory work in practical applications as indicated below.

- Risk control models applied to fire phenomena, human element programs.
- Physical protection against natural disasters, fire, flood, windstorm, earthquake.
- Design of automated suppression systems for fire control.
- Electrical equipment characteristics. Explosion initiation, effects, control design criteria.

**References**


MM820  
*Risk Engineering Science (Maintenance Engineering)*

A subject in the Graduate Diploma in Risk Management.  
**Subject aims and description**

This subject aims to extend the MM810 introductory work in practical applications as listed below.

- Material fundamentals, metals, non-metals, applications, selection criteria.
- Corrosion, mechanism, types prevention and protection strategies. Failure mechanisms, fracture, overload, fatigue, fractography, cleavage, striation, environmentally assisted cracking, stress corrosion, hydrogen embrittlement, corrosion fatigue, design strategies to minimise failure.
- Tribology, friction, wear, lubrication. Surface engineering, surface variation, surface coatings.

**References**


Mathews, J. *Health and Safety at Work*. 2nd ed, Sydney, 1993


MM821  
*Risk Management Practices (Health and Safety)*

A subject in the Graduate Diploma in Risk Management.  
**Subject aims and description**

This subject aims to extend the MM810 introductory work in practical applications of management functions from organisations arising from risks associated with health and safety requirements and the prevention of loss to organisations.

- Sources of information: risk and control information
- Organisational design of effective implementation and continuation of H&S programs; roles, responsibilities, communication processes, program audits.
- Implementation and evaluation of control measures for buildings, machinery and equipment.
- Rehabilitation and claims management.
- Risk assessment for public and product risk: methods, criteria, and program elements, incident reporting systems, design and disposal screening; incidental reporting systems, design and disposal screening.
- Public health and safety program design and implementation.
- Contingency and emergency planning; damage control strategies.

**References**


Mathews, J. *Health and Safety at Work*. 2nd ed, Sydney, 1993


MM822  
*Risk Management Practices (Plant and Property)*

A subject in the Graduate Diploma in Risk Management.  
**Subject aims and description**

This subject aims to extend the MM810 introductory work in practical applications of management functions from risks associated with the prevention of loss to property and production within an organisation.
Determination of levels of insurance cover, deductibles, reinsurance, self insurance, limits of cover, perils, environmental, public and product liability, business interruptions and construction exclusions, marine insurance, transit and cargo.

Resource management: environmental requirements, emergency and evacuation procedures; security concerning physical facilities; document and other security requirements. Building services requirements: energy management (heat and cooling), fire protection, repairs and improvements, acquisition and divestment of plant and property.

Design of management systems: control strategy, financing and reporting.

Application of information systems.

Subject aims and description
This subject aims to introduce students to the risks associated with occupational hygiene factors and to emphasise control methods.

The course of study examines occupational hygiene factors, invasive mechanisms and methods of control to reduce the risk of damage to residents.

Control and measurement aspects of occupational hygiene. Toxicology; dose-response relationships, TLVs applied to chemicals, noise, vibration, radiation.

Chemical hazards and their effects, medical monitoring programs. Respiratory protection, equipment types, ventilation requirements for extraction and dilution.

Noise and vibration control programs, hearing conservation programs.

Thermal stress and comfort measures of stress and comfort. Radiation, ionising and non-ionising, uses and applications, exposure risks.

Biological hazards, legionnaire's disease, zoonoses, AIDS, bacterial infections.

Stress, physical, psychological and social stressors.

References

MM824 Risk Technology (Health and Safety)
No. of hours per week: two hours
Instruction: lectures and tutorials

A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to provide an understanding of the practical applications of management functions arising from risks associated with maintenance requirements and the prevention of loss within an organisation.

Strategies for systems operation and support.

Maintenance operations: selection of maintenance strategies based on management decisions, maintenance planning, resource allocation, plant inventory, maintenance control, plant records.

Stores and spares inventory: scientific inventory control, inventory analysis and strategies, stores and spares management policy assessments.

Work measurement in maintenance: method study, work improvement, work sampling in maintenance; Just In Time programs.

Information management: technical and management database assessment and management (search, retrieval, assessment and consolidation).

Computer applications: software for maintenance, evaluation of commercial packages.

References
Kelly, A. Maintenance Planning & Control London: Butterworths, 1984

MM825 Risk Technology (Plant and Property)
No. of hours per week: two hours
Instruction: lectures and tutorials

A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to introduce the practical application of risk control techniques in areas of safety.

Australian industry requirements with required safety protection.

Fire detection and protection equipment and techniques: operations and use of sprinklers; fire pumps and water supplies, carbon dioxide suppression systems; protection against flammable liquids and explosive atmospheres.

References
Periodical: Reliability Engineering & System Safety. (Current issues)
Standards Association of Australia, (current relevant standards)

MM826 Risk Technology (Maintenance)
No. of hour; per week: two hours
Instruction: lectures, laboratory work and site visits

A subject in the Graduate Diploma in Risk Management.

Subject aims and description
This subject aims to provide an overview of maintenance practices and technologies used to predict plant performance reductions from the onset of damage and to introduce methods used to improve operating performance through monitoring procedures.

Condition monitoring, noise, vibration, performance. Non destructive testing, oil and wear debris analysis, spectroscopy, ferrography, wear atlas, centrifugal method.

Fluid system diagnostics.

Case studies illustrating techniques studied.
A subject in the Graduate Diploma in Risk Management.

Subject aims and description

This subject aims to enable a research project to be carried out in the field of risk management and to report on the findings.

Execution of project to achieve a practical result.

References

Lane, N. Techniques for Student Research. Melbourne: Longman Cheshire, 1989

MM827 Risk Project

No. of hours per week: two hours

A subject in the Graduate Diploma in Risk Management.

Subject aims and description

This subject aims to develop an understanding of the mathematics of finite element analysis and the application of FEA to engineering problems.

Approximation and interpolation for data, functions and integrals using polynomials and orthogonal functions.

Lagrange polynomials. Methods of weighted residuals for ordinary differential equations with homogeneous and non-homogeneous boundary conditions.

Linear and cubic Hermite basis functions, applications including beam problems.


Textbooks

Burnett, DS. Finite Element Analysis From Concepts to Applications. Reading, Mass.: Addison Wesley, 1987
Prenter, P.M. Splines and Variational Methods. NY: Wiley, 1975

References

Sharland, I. Wood's Practical Guide to Noise Control. GEC, 1979

MM903 Numerical Engineering Project

No. of hours per week: one hour

Prerequisite: MM902

Assessment: project

A subject in the Master of Engineering (CIM).

Subject aims and description

A project based course on the application of numerical methods in engineering based on in particular the application of microcomputer FE analysis.

Textbooks

See MM902

References

See MM902

MM904 Systems Integration

No. of hours per week: three hours

Assessment: assignment/examination

A subject in the Master of Engineering (CIM).

Subject aims and description

The aim of this subject is to discuss the issues related to computer integrated manufacturing (CIM) system by introducing its elements and systematically integrating those elements to a unified, efficient system.

Characteristics of integrated, flexible manufacturing systems; CIM, RMS, people's attitudes, managerial implications, financial analysis, decision making.

Computer control: data bases, types of data, program storage and distribution, system control, system monitoring, reporting.

Group technology; background, part families; parts classification and coding systems; production flow analysis, algorithms. MIC cell design, types (single, groups) (manual, semi-integrated), RMS; M/C arrangement in cell (Hollier's algorithms) cell utilisation, benefits of GT, process planning.

Flexible manufacturing systems (FMS): economics; loading; planning and design; scheduling; modelling and computer support.

Simulation: in design and study of performance of CIM; modelling process, use of computer packages.

Managerial aspects of CIM: training, industrial relation, contribution to JIT, quality.

References

MM905  Computer and Interfacing
No. of hours per week: three hours
Assessment: project/essay work and examination

A subject in the Master of Engineering (CIM).

Subject aims and description
This subject aims to introduce students to advanced techniques in the design of interfaces between computers and industrial equipment. To provide a high level of understanding of the principles involved in communications protocols development, OSI networks.

Designing with AID and D/A converters, control of multiple, servo-driven axes (CNC), PLCs and specialised interfacing hardware. Selection of communications parameters and systems. Design and implementation of point to point communications protocols. OSI/non-OSI bus networks and protocols.

References
Cripps, M. Computing Interfacing — Connection to the Real World. London: Edward Arnold, 1989

MM906/    Project A
MM907/    Project B
No. of hours per week: project A — eight hours; project B — twelve hours
Assessment: continuous assessment/final report and presentation (Assessment will be in accordance with the regulations and marking scheme handed out to students when projects are approved)

Subject aims and description
This subject aims to give the student the opportunity to apply the subject matter studied in the other course subjects to CIM related problems in his/her specific field of interest.
Students will work on approved problems under staff supervision. External supervisors may also be appointed. Each project will require a literature survey, and a theoretical and/or experimental investigation.

Results and conclusions will be presented in a written report and oral presentations to selected audiences will be required to accustom the student to giving oral progress reports on a major project. The project is marked in two parts:
Part A — progress is assessed by continuous assessment of research work plus draft submission of "Introduction, literature survey and experimental design" parts of thesis;
Part B — full assessment in accordance with assessment above.

MP280    Construction Materials
No. of hours per week: three hours
Prerequisites: MP180 Construction Materials
Instruction: lectures, tutorials, laboratory work
Assessment: examinations 70%, reports 30%

Subject aims and description
A second-year subject of the degree of Bachelor of Technology (Building Surveying), designed to extend students' knowledge of material behaviour relevant to building construction.
Detailed treatment of selected materials such as alloy steels, structural steels, high strength weldable steels, stainless steels, copper alloys, aluminium alloys, plastics and rubber in civil engineering and building applications. Ceramics, properties, types, effects of residual stresses and contraction, glasses, types of modes of failure. Corrosion and deterioration: causes, prevention and minimisation. Materials: ferrous metals, non-ferrous metals, light metals, polymers, paints. Non destructive testing: general principles, types, uses.

Reference

MP286    Building Materials 2
No. of hours per week: four hours
Assessment: assignment and examination

Subject aims and description
A second-year subject designed to extend students' knowledge of material behaviour relevant to building construction.
Detailed treatment of behaviour of selected materials used in building: steels, high strength weldable steels, aluminium alloys, plastics and rubbers used for cladding and pipe systems.
Joining methods: principles of behaviour of the different joining systems including welding, adhesive bonding, soldering, brazing, mechanical fasteners, comparative costs of various joining methods.

For textbooks and references see MP183.

MP711    Mass Transfer
No. of hours per week: four hours
Assessment: laboratory work, assignment and examination

Subject aims and description
This subject aims to provide the student with an insight into the theory, and physical reality of diffusional mass transfer.
Convective mass transfer; mass transfer coefficients; interphase mass transfer. Theory and design of continuous differential contactors; mass transfer with chemical reactions; mass, heat and momentum transfer analogies. Gas absorption, liquid/liquid extraction.

Textbook
Reference

MP712    Unit Operations
No. of hours per week: four hours
Assessment: practical work and examination

A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to impart understanding of physical phenomena involving particles, and the importance of these in chemical manufacturing.
Fluid/particle systems: hydraulic classification, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.
Handling and transport of powders, powder mixing, crushing, grinding and screening.

Textbook
MP713 Chemical Engineering Design 1
No. of hours per week: four hours
Assessment: assignments an examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to instruct students in the fundamentals of chemical engineering thermodynamics and the basic principles of mass and energy balances as a basis for further study in chemical process technology.

Basic design techniques: mass and energy balance calculations; flowsheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.

Chemical engineering thermodynamics: physical equilibrium, bubble and dew point relations, phase diagrams, activity and activity coefficients, Gibbs Duhem equation, chemical reaction equilibria, heats of reaction and mixing.

Textbooks

MP714 Stagewise Processes
No. of hours per week: five hours
Assessment: practical work and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to give students a general understanding of industrial mass transfer operations, and of stagewise methods for the design of mass transfer equipment.

Applications of mass transfer operations such as distillation, gas absorption, liquid-liquid extraction and leaching in chemical manufacturing; descriptions of the equipment in which these operations are carried out.

Behaviour of plate and packed columns; characteristics of packings; bubble cap and sieve trays, weirs and downcomers; flooding, hold-up and pressure drop; selection of optimum column diameter.

The concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, leaching and other mass transfer operations. Graphical and computer-based design techniques employing this concept: McCabe-Thiele, Sorel and Ponchon-Savirat methods.

Textbook
Freybal, R.E. Mass Transfer Operations. 3rd ed, (S Units), McGraw Hill, 1983

Reference

MP715 Heat Transfer
No. of hours per week: five hours
Assessment: practical work and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to provide the student with a sound approach to the design and selection of heat transfer equipment.

Description and characteristics of shell and tube exchangers, and alternative geometries; boilers, condensers, etc. with examples of their use.

Review of previous work in heat transfer, namely unidimensional conduction, Newton’s Law of cooling, overall heat transfer coefficients.

Prediction of heat transfer coefficients by the mechanisms of natural and forced convection, film and dropwise condensation, nucleate and film boiling. LMTD, FT and E-NTU methods to determine temperature driving forces. Thermal rating of shell and tube exchangers; pressure drop in heat exchangers.

Textbooks

MP717 Industrial Processes and Pollution Control
No. of hours per week: four hours
Assessment: assignment and class participation
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to teach students by the use of case studies and other means to scientifically assess the possible pollution outcomes of various processes.

Use of process flow diagram. Simple process calculation stoichiometry, combustion, heat and mass balances. Disposal and dispersal of efficient, stack heights, etc. Description of major industries and their problems (aluminium industry, electroplating, etc.). Major environmental issues of general concern (acid rain, atomic power, PCBs, dioxide, dumping of toxic waste).

MP719 Occupational Health and Safety
No. of hours per week: four hours
Assessment: assignments and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to provide a working knowledge of types of hazards encountered in the workplace and means by which these may be overcome.


Toxicology: toxic substance; mechanisms of action and pathogenic effects (carcinogenesis, mutagenesis, teratogenesis). Routes of ingestion toxic substances including heavy metals, benzene, PCB, solvents, etc.


MP724 Chemical Engineering Design
No. of hours per week: five hours
Assessment: assignments, practical work and examination
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
This subject aims to acquaint the student with the responsibilities of the professional chemical engineer and some of the issues he or she may have to confront.

A separate segment seeks to consolidate the student’s
previous work in computer programming by applying it to problems relevant to his or her future career.

Computer-aided design: the use of software packages for flowsheeting, flowsheet preparation and layout; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.

**Textbook**

**MP751 Design Applications**
No. of hours per week: five hours
Assessment: assignments, practical work and examination

**Subject aims and description**
The aim of this subject is for students to apply the theories of heat and mass transfer studied in the fourth year of the course, to the design of equipment for the operations listed below.

Industrial applications of heat and momentum transfer.
Diffusional operations: drying, crystallisation, water cooling and humidification.
Single and multi-effect evaporator systems; thermal and mechanical recompression. Operation, control and economics of evaporation systems.

Similarity studies — mixing.

**Textbook**

**Reference**

**SM193 Mathematics**
No. of hours per week: three hours in first semester and two hours in second semester
Instruction: lectures, tutorials
Assessment: examination 50%, assessed work 50%

A first-year subject in the degree of Bachelor of Technology (Building Surveying).

**Subject aims and description**
A first-year subject of the Degree of Building Surveying designed to provide the students with a mathematical basis behind many construction subjects. Topics include: vectors, trigonometry, calculus, matrices, algebra, statistics, financial mathematics and computer studies.

**References**

**SM199 Engineering Mathematics**
No. of hours per week: three hours for two semesters
Instruction: lectures, tutorials
Assessment: examinations, tests

**Subject aims and description**
A first-year subject in all degree courses in engineering which coven the basic mathematical knowledge considered to be minimally essential for an adequate understanding of the concurrent first-year studies in engineering.

The subject presents some additional material relevant to later engineering studies which will enable those students with ability and interest to develop further their mathematical knowledge and skills.

Functions, differentiation, integration methods, applications of differentiation and integration, infinite series, complex numbers, hyperbolic functions, differential equations, analytical geometry, functions of more than one variable, linear algebra, numerical methods.

**Textbook**

**References**
Shenk, A. Calculus and Analytic Geometry. 4th ed, Glenview: Scott, Foresman, 1988

**SM199A Mathematics Alternate**
No. of hours per week: five hours for first semester, four hours for second semester, excluding the first two weeks of each semester which will be seven hours per week
Instruction: lectures, tutorials
Assessment: examinations, tests

A first-year mathematics subject for the Special Entry Scheme.

**Subject aims and description**
The subject covers the basic mathematical knowledge considered to be minimally essential for an adequate understanding of the concurrent first-year studies in engineering, but also covers extra mathematical groundwork. The subject presents some additional material relevant to later engineering studies which will enable those students with ability and interest to develop further their mathematical knowledge and skills.

Functions, differentiation, integration methods, applications of differentiation and integration, infinite series, complex numbers, hyperbolic functions, differential equations, analytical geometry, functions of more than one variable, linear algebra, numerical methods.

**Textbook**

**References**
Berkey, B.D. Calculus 2nd ed, New York: Saunders College, 1988
Shenk, A. Calculus and Analytic Geometry 4th ed, Glenview: Scott, Foresman, 1988

**SM293 Engineering Mathematics**
No. of hours per week: three hours for two semesters
Instruction: lectures and practical workshops

A second-year subject in the degree of Bachelor of Engineering (Civil).

**Subject aims and description**
Integration—integration methods, plane polar coordinates, double integrals and applications, cylindrical and spherical coordinates, triple integrals and applications.
Vector Calculus — scalar and vector fields, gradient of a scalar field, the potential, surface integrals, flux of a vector field, divergence Gauss’ theorem, continuity of fluid flow, line integrals. curl, Stokes theorem, introduction to fluid dynamics.

Linear algebra — orthogonal matrices, eigenvalued problems, real symmetric matrices and applications.

Statistics — review of data analysis, probability distributions for discrete variates and continuous variates, sampling distributions. The t distribution, F and Chi-Square hypothesis testing, goodness of fit. ANOVA (One and Two-way), correlation and simple regression, experimental design.

Minitab package used.

Operations research chosen from queuing theory and linear programming.

Textbook
Smith, P.J. Intro Statistics. Melbourne, Australia: Thomas Nelson, 1993

References
Ryan, B.F., Joiner, B.L. and Ryan, T.A. Minitab Handbook. 2nd ed, Boston: Duxbury Press, 1992

SM294 Engineering Mathematics
No. of hours per week: four hours for two semesters
Prerequisite: SM199 (or SM199A) Engineering Mathematics
Instruction: lectures and tutorials
Assessment: examination and tests

A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
This subject aims to provide the necessary mathematical background and analytical techniques essential for the understanding of the engineering course and for further research.

Subject description


Fourier series: orthogonality. Trigonometric Fourier series, Euler formulas, half range series, Dirichlet’s theorem. Parseval’s formula, power spectrum, transmission of periodic waveforms by two port networks, transfer functions.


Vector fields: line and surface integrals, grad, div and curl, the formulas of Gauss and Stokes, combinations of vector operators, scalar potential, the equations of Laplace and Poisson.


Probability and statistics: combinational reliability, series and parallel systems, redundancy, statistical dependence. Discrete distributions, the binomial distribution, the Poisson distribution. Continuous distributions, probability density functions, the normal, chi-square, Rayleigh and gamma distributions, sum of two random variables, characteristic functions, the central limit theorem. Confidence limits and hypothesis testing for the mean and variance. Goodness of fit.

References

SM295 Engineering Mathematics
No. of hours per week: six hours for five weeks, seven hours for nine weeks

A subject in the bridging program for engineering students from SE Asia.

Subject aims and description
Vector geometry, functions of more than one variable, partial differentiation, differential equations.

Statistics, multiple integration, vector calculus, linear algebra.

References

SM299 Engineering Mathematics
No. of hours per week: three hours for two semesters
Instruction: integrated instruction and practice

A second-year subject in the degree of Bachelor of Engineering (Mechanical/Manufacturing).

Subject aims and description
Integration-integration methods, plane polar coordinates, double integrals and applications, cylindrical and spherical coordinates, triple integrals and applications.

Vector calculus — scalar and vector fields, gradient of a scalar field, the potential, surface integrals, flux of a vector field, divergence Gauss’ theorem, continuity of fluid flow, line integrals, curl, Stokes theorem, introduction to fluid dynamics, introduction to tensors and tensor notation.

Linear algebra — orthogonal matrices, eigenvalue problems, real symmetric matrices and applications.

Statistics — review of data analysis, probability, probability distributions for discrete variates and continuous variates, sampling distributions. The t distribution, F and Chi-Square, hypothesis testing, goodness of fit. ANOVA (One and Two-way), correlation and simple regression, experimental design. Minitab package used.
Differential equations — revision of differential equations,
Laplace transforms, solution of differential equations by
Laplace transforms, solution of differential equations by
series, applications.

Textbook
Smith, P.J. Intro Statistics. Melbourne, Australia: Thomas Nelson, 1993

References
Ryan, B.F., Joiner, B.L. and Ryan, T.A. Miniatr Handbook. 2nd ed, Boston: WPS-Kent, 1992
Thomas, GB. and Finney, RL. Calculus and Analytic Geometry, 8th ed, Reading, Mass.: Addison Wesley, 1992

SM393 Engineering Mathematics
No. of hours per week: two hours
Instruction: integrated instruction and practice

Subject aims and description
Numerical solution of linear and non-linear algebraic equations, introduction to finite difference methods for ordinary and partial differential equations, applications.

Fourier Series and partial differential equations.

SM394 Engineering Mathematics
No. of hours per week: three hours
Prerequisites: SM299 Engineering Mathematics
Instruction: lectures/tutorials
Assessment: examination/tutorial assignments

A third-year subject in the degree of Bachelor of Engineering (Civil)

Subject aims
This subject aims to provide the fundamental numerical techniques and the tools of discrete mathematics which are indispensable to the modern engineer.

Subject description
Numerical methods — numerical solution of linear and non-linear algebraic equations, introduction to finite difference methods for ordinary and partial differential equations, applications.
Z transforms — an introduction to the Z-transforms and its properties.

Discrete mathematics — mathematical logic, counting methods, recurrence relations, applications.

Prescribed course material

References

SM395 Engineering Mathematics
No. of hours per week: three hours
Instruction: integrated instruction and practice

A third-year subject in the degree of Bachelor of Engineering (Manufacturing).

Subject aims and description

References

SM396 Engineering Mathematics
No. of hours per week: three hours
Instruction: integrated instruction and practice

A third-year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description

References

SM493 Engineering Mathematics
No. of hours per week: two hours

A subject in the fourth year of the degree of Bachelor of Engineering (Civil).

Subject aims and description
Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

References
SM494 Engineering Mathematics
No. of hours per week: two hours
Prerequisite: SM394
Instruction: lectures/tutorials
Assessment: examination/tutorial assignment
A fourth-year subject in all streams of the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
To further develop the specialised mathematical analytical techniques used in the more advanced and specialised engineering subjects.

Subject description
Complex variables: elementary functions, geometry of the complex plane, mappings, complex differentiation, conformal mapping, potential problems, contour integration, residue theory, application to the evaluation of real integrals and inversion of Laplace transforms.
Curvilinear coordinates: revision of potential theory; general coordinate systems, coordinate surfaces, curves and vectors, orthogonal systems; grad, div, curl and Laplacian in orthogonal systems.
Linear algebra: background, transmission matrices, vector spaces, solution of linear equations; the eigenvalue problem, the Cayley-Hamilton theorem, numerical evaluation using power method, characteristic impedance, propagation function; systems of linear differential equations, solution of first order systems by reducing to an eigenvalue problem, the phase plane, equilibrium, quadratic forms and matrices, Liapunov’s direct method, linearisation of non-linear systems.

Prescribed course material
SM494 — Mathematics for Electrical Engineering. Department of Mathematics, Swinburne University of Technology, 1993

References

SM499 Engineering Mathematics
No. of hours per week: two hours
Instruction: integrated instruction and practice
A fourth-year subject in the degree of Bachelor of Engineering (Mechanical).

Subject aims and description
Introduction to finite element methods; approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

References
Easton, A.K., Robb, P.J. and Singh, M. Approximation and the Finite Element Method. 1993

SM741 Statistics and Reliability
No. of hours per week: two hours
A subject in the Graduate Diploma in Risk Management.

Subject description

References
O’Connor, P.D.T. Practical Engineering Physics. 2nd ed, Chichester: Wiley, 1985

SP294 Engineering Physics
No. of hours per week: two hours for two semesters
Prerequisite: EE188
Instruction: lectures
Assessment: examination/assignment
A second-year subject in the degree of Bachelor of Engineering (Electrical — unstreamed).

Subject aims
This subject aims to develop in students a familiarity with selected areas of classical and modern physics, particularly those areas relevant to modern electrical engineering; to allow students to obtain a basic understanding of the properties and usage of materials that are relevant to electrical engineering.

Subject description
Relativity: inertial frames, covariance, constancy of speed of light, special relativity, space-time, mass and energy.
Optics: lasers and other light sources, modulators and detectors. Optical fibres as sensors and in communications. Holography and holographic devices.
Nuclear physics: nuclear structure, properties, stability and reactions. Fission, fusion and nuclear power.

Textbook

SP419 Occupational Hygiene and Safety
No. of hours per week: four hours
Assessment: examination and assignments
A subject in the Graduate Diploma in Chemical Engineering.

Subject aims and description
Environmental hazards
Accident prevention. Work-related injuries including  tendonitis, back and muscle injuries. Relationship of physical defects to employee safety. Stress in the workplace, measurement and alleviation.
Toxicology
Toxic substances, mechanisms of action and pathogenic effects (carcinogenesis, mutagenesis, teratogenesis). Use of mammals and sub-mammalian systems in predicting and assessing toxic effects in humans.

Routes of ingestion of toxic substances including heavy metals, benzene, PCB solvents, organic chemicals, silica, asbestos, allergens and pesticides.

Evaluation and control measures.

Safety technology


Chemical safety. Handling, chemical safety, hazard indentification. Storage and transport of dangerous and toxic chemicals. Inspection of ventilation for micro organisms.
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Courses offered

Diploma of Art (Graphic Design)
Bachelor of Arts (Graphic Design)
Bachelor of Arts (Industrial Design)
Graduate Diploma in Animation and Interactive Multimedia

General Design Information

Campus changes

The School of Design is in the process of relocating its activities to new accommodation on Swinburne's Prahran campus. In 1994 first and second years of the Graphic Design programs will be conducted on the Hawthorn campus and the third and fourth years on the Prahran campus.

The Centre of Animation/Interactive Multimedia is located on the Hawthorn campus.

Changes to Design Courses

As a result of the transfer of courses in Graphic Design and Industrial Design from Victoria College to Swinburne, these programs, together with those conducted on the Hawthorn Campus, are currently being reviewed.

The School of Design has proposed the introduction of a Bachelor of Design and Bachelor of Design (Honours) course in 1994 for both Graphic Design and Industrial Design to replace the existing diploma and degree courses. The Bachelor of Design will be a three year full-time degree course and the Bachelor of Design (Honours) program will be four years full-time study. Concurrent with the development of the new undergraduate courses, higher degree programs leading to masters qualifications by coursework, research and coursework are being written and will be offered in 1995.

The subject codes and course structures in this handbook may change.

Centre for Animation and Interactive Multimedia

For all information regarding this centre see page 403.

Assessment

For Graphic Design: Each year of the course is taken as a whole and in order to qualify, an overall pass must be achieved on the year's work.

For Industrial Design: Students must pass each semester unit in order to progress. Prerequisite conditions apply to all stages of the course.

To qualify for a Diploma of Art (Graphic Design), a Bachelor of Arts (Graphic Design) or a Bachelor of Arts (Industrial Design), a student must achieve a pass in all subjects.

A Faculty Pass may be awarded under exceptional circumstances. The School Board is the final authority for determining the results in any of the examinations for the School of Design. The Faculty of Arts has responsibility for the processing of academic awards for the School of Design.

Examinations

Students must enter for all subjects in a particular year of the course except where an exemption has been approved or electives offered.

The form of the examination and the content of the project work (assigned projects) will be determined by the panel of examiners and moderators appointed by the School Board.

Attendance

Students are expected to attend all lectures, assignment briefings, progress tutorials and critiques and timetabled studio sessions in each semester.

The Administration Committee may preclude a student from further attendance, or the right to further assessment, if the lecturer responsible reports the student's attendance to be unsatisfactory.

These courses may only be taken on a full-time basis.

General conditions

Swinburne reserves the right to retain any work executed by students as part of their course studies. Work not required may be claimed by the student after it has been assessed.

The courses are not available for part-time or external study.

Entrance requirements

VCE prerequisite studies: English Units 3 and 4 to be included in the "best four".

Recommended subjects: Art or art related subjects.

Note: Art studies undertaken subsequent to a satisfactorily completed VCE qualification should not be regarded as a prerequisite, however these studies may enhance an applicant's chance of entry.

Special requirements: All applicants, including those from interstate and overseas, must participate in a preselection program and attend an interview and folio presentation in December if required. This program requires applicants to submit copies of slides of work and a written response to questions. Applicants required for interview should bring a folio of their own work which indicates a preparation and ability to undertake this course and be able to demonstrate an awareness of the course content and career opportunities.

All applicants who specify either graphic design or industrial design must follow carefully the procedure for enrolment which is given with dates and other details in the Victorian Tertiary Admissions Centre publication, Guide to Courses in Colleges and Universities. This is published in August, and distributed to all secondary schools, or is available on application to the Victorian Tertiary Admissions Centre, 40 Pak Street, South Melbourne 3205, telephone 690 7977. Please refer to 'Application procedure', in the general section of this Handbook.

For industrial design applicants, a pass in mathematics or science subject to year 11 is desirable and some knowledge of instrumental and rendered drawings. The folio should include three-dimensional models, technical drawings, renderings, photographs and sketches, including developmental back-up work and any other written work. If a folio is not available or incomplete, a short test may be given.

All applicants without resident status must apply direct to Swinburne.

All overseas applicants, including Australian citizens, must be able to attend for interview, if required.

Applications for second year and higher must be made direct to Swinburne and not through VTAC.
The aim of the diploma course is to train designers to work effectively in areas where information is conveyed by visual means, such as advertising, publishing, publicity, printing, merchandising, education and some research projects. The course is planned to produce imaginative designers, who, with specialisation and experience in industry, should achieve positions commensurate with their individual talents.

The first two years of the course are common to each of the diploma/degree streams but in the final diploma year, a number of special bias studies are offered, including photography, illustration and three-dimensional design.

**Course structure**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subject</th>
<th>Hours/week</th>
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</thead>
<tbody>
<tr>
<td>First year</td>
<td>RG101: Assigned Projects 1</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>RG111: History of Arts 1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>RG120: Introduction to Critical Studies</td>
<td>2</td>
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<tr>
<td>Second year</td>
<td>RG201: Assigned Projects 2</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>RG211: History of Arts 2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>RG220: Critical Studies</td>
<td>2</td>
</tr>
<tr>
<td>Third year</td>
<td>RG301: Assigned Projects 3</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>RG335: Art and Design Culture (two semesters)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>RG322: Print Technology (one semester)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Note: Changes subject to ratification.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Results will be published for each subject and for the year as a whole.</td>
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</tbody>
</table>

**Graphic Design**

GP44  **Diploma of Art** (Graphic Design)  
(Hawthorn campus)

The aim of the diploma course is to train designers to work effectively in areas where information is conveyed by visual means, such as advertising, publishing, publicity, printing, merchandising, education and some research projects. The course is planned to produce imaginative designers, who, with specialisation and experience in industry, should achieve positions commensurate with their individual talents.

The first two years of the course are common to each of the diploma/degree streams but in the final diploma year, a number of special bias studies are offered, including photography, illustration and three-dimensional design.

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<td></td>
<td>Results will be published for each subject and for the year as a whole.</td>
<td></td>
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</tbody>
</table>

GP55  **Bachelor of Arts** (Graphic Design)  
(Hawthorn campus)

**Industry Based Learning (IBL)**

The aim of the degree course is to meet the present and future needs of industry, and to train people with a high degree of creative ability for positions of administrative responsibility in the areas of direction and production of printing, publishing, computer-based production techniques, advertising, education and information design.

At the completion of the second year, students are selected for the degree course. They are required to spend the whole of the third year working in an industrial situation organised by Swinburne. This third year enables the student to begin professional practice and is supervised by senior staff.

During the year in industry, students are required to attend the University for two sessions per week for theoretical subjects: Print Technology and Art and Design Culture.

In the final year, in addition to Assigned Projects 4, Design Management is studied.

**Design Centre Degree Program**

Diploma students who achieve an overall high standard in their final year qualify to apply for the Design Centre degree program which provides an introduction to professional design practice in an educational environment.

Students who are selected for this program undertake a variety of professional consultancy-based design projects under the guidance of lecturing staff and industry mentors.

**Course structure**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subject</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third year</td>
<td>Art Direction 5</td>
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<tr>
<td></td>
<td>Copywriting 5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Storyboard 5</td>
<td>6</td>
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<tr>
<td></td>
<td>Media Technology 5</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Marketing 5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Art Direction 6</td>
<td>12</td>
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<tr>
<td></td>
<td>Copywriting 6</td>
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<tr>
<td></td>
<td>Storyboard 6</td>
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<tr>
<td></td>
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<td>6</td>
</tr>
<tr>
<td></td>
<td>Marketing 6</td>
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</table>

**Fourth year**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Subject</th>
<th>Hours/week</th>
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<tbody>
<tr>
<td></td>
<td>Advertising Design 7</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Advertising Design 8</td>
<td>24</td>
</tr>
</tbody>
</table>
Graphic Design Subject Details

All subject details are listed in strict alpha-numeric order

GD5036 Art Direction 5
Prerequisites: Graphic Design 4, Print Technology 4 or equivalent (eg, Methods of Production 4), Visualising 4 or equivalent (eg, Idea Drawing 4)
The major design course will continue to emphasise creative development through applied experiences, but with a broader 'assigned project' format that will extend and strengthen the degree of students' understanding of professional practice. Students will undertake problem-solving commitments that will require the consideration and correlation of many complicating factors. Responsibilities for segments of projects will be allocated and the class will be guided towards working as a team.

GD5040 Copywriting 5
No. of hours per week: two hours for one semester
Prerequisite: nil
This unit will initially concentrate on audience and message. Through example and group discussion, students will be made aware of the basic principles behind effective, informational and motivational copy. Existing copy ideas will be discussed and summarised, newspaper and magazine articles will be edited and improved, and existing captions will be analysed and modified to increase their effectiveness and meaning. Existing advertisements will be discussed and rewritten, and original copy ideas will be applied to posters, packages, brands and logotypes. Typography and layout skills will be enhanced.
Students will be expected to undertake prescribed reading.

GD5042 Storyboard 5
No. of hours per week: six hours for one semester
Prerequisite: visualising 4 or equivalent (eg, Idea Drawing 4)
Based on skills developed in the prerequisite visualising units, Storyboard 5 concentrates on developing fluency and consistency within standard two-dimensional storyboard formats, and aims initially at competence in a range of marker pen techniques from linears through to comprehensive colour renderings. First assignments will be based on existing scripts, whereas later assignments will require the integration of original script and audio ideas. These later projects will draw upon skills and experiences gained from the copywriting and media production units and begin to introduce alternatives to marker pen renderings, such as collage, photo-montage and photography as effective storyboard mediums. Through these experiences students will improve their ability to conceive and visualise complex segmental and spatial effects and narrative ideas.

GD5044 Media Technology 5
No. of hours per week: three hours for one semester
Prerequisites: Print Technology 4 or equivalent (eg, Methods of Production 4)
This unit will consist of a series of investigations and practical experiences in the areas of radio, television and film production. It also covers the technical and creative support industries in parallel with Art Direction 5.
This course work will be covered through:
- industry visits
- work experience
- individual research through professional and industrial contacts
Students will be assisted in work experience placement and rotation, and in establishing professional and industrial contacts. Through these experiences students will endeavour to cover all production phases including pre-production and post-production.
The support industries will include music composition and soundtrack production, animated and computer-generated imagery, set and model engineering, prop, costume and talent agencies.

GD5046 Marketing 5
No. of hours per week: two hours for one semester
Prerequisite: nil
The unit will focus on the role of the marketing executive and will make use of Australian case studies related to basic theory. Emphasis will be placed on class participation and general discussion of the nature and role of marketing in design and advertising.

Prescribed text

GD6037 Art Direction 6
Prerequisites: Art Direction 5, Marketing 5, Copywriting 5, Storyboard 5, Media Technology 5
The major design course will now concentrate on introducing and correlating experiences, skills and concepts, pertinent to understanding the creative, administrative and technical processes behind advertising campaigns, promotions and media events that require the co-operative talents of many people. Specific projects will encourage the integration of experiences and skills developed in the marketing, copywriting, storyboard and media technology units undertaken in the previous semester.
The delegation and rotation of responsibilities throughout the project sequence will continue from Art Direction 5, with the onus increasing on the group and students. The 'team' will appoint a different chairperson or 'director' for each project, and take responsibility for nominating and organising guest lecturers, industry visits and work experience segments. In this way the unit achieves a strengthening of inter-personal and group attitudes, and as a result improves skills in collective problem-solving as opposed to individual problem-solving.
GD6041 Copywriting 6
No. of hours per week: two hours for one semester
Prerequisite: nil

This copywriting unit concentrates on the design of advertisements, publications, promotional and point of sale materials from a copy viewpoint. Assigned projects will require students to come to terms with the disciplines of working simply, logically and creatively with words and verbal ideas. Again typography, typesetting, layout and presentation skills will play an important role in each project's presentation. Later projects may include additional visual elements such as photographs and illustrations.

Projects undertaken in this unit will relate directly to art direction and marketing units.

GD6043 Storyboard 6
No. of hours per week: six hours for one semester
Prerequisite: Storyboard 5

The storyboard units will gain input from both the copywriting and media production units through the continuing introduction of creative copy/script ideas, an understanding of sound recording and mixing techniques, and a developing appreciation for the potential of electronic media. The development of conventional presentation techniques begun in Storyboard 5 will be complemented through the broad spectrum of creative possibilities available through photography and synchronised slide presentations, animatics, film and videotape. Through experiments in style and presentation modes students will further develop their perceptual, structural and narrative concepts. Projects will attempt to emulate video clips, television commercials and animated films, using low tech equipment and students functioning in support roles for each other, camera, sound, model-maker, editor.

GD6045 Media Technology 6
No. of hours per week: six hours for one semester
Prerequisite: Media Technology 5

This unit comprises a series of experiences in production planning and management. At this stage of the program, students will assume the greater responsibility for the organisation of their course. Through work experience segments (one day per week), students will be expected to gain first-hand experience in areas such as sub-contracting, briefing, cost estimating, production scheduling, specifying, pre-production and post-production meetings, media insertions and publications deadlines. Under work experience conditions students will come into contact with art directors, production managers and media managers.

GD6047 Marketing 6
No. of hours per week: two hours for one semester
Prerequisite: Marketing 5

Market Research and Decision-Making: the role of market research in marketing management and the effective organisation of the market research function.

Research Design: the nature of research design and steps in design process.

Value and Cost of Information: test-marketing new products, what should be researched and the role of intuition. The research budget and the expected value approach to determining the value of information.

Survey research: survey research and the use of panels ex post factor research.

Experimentation: nature of experimentation, types of errors affecting experimental results, experimental design, experimental environment and the use of experimentation in decision-making.

Measurement and Research: the concept of measurement, scales of measurement and components of measurement. Questionnaire design, content, response format, question sequence, pretesting and questionnaire characteristics. Attitude scales, rating scales, multi-dimensional scales.

Observation, depth interviews and projective techniques.

Problem Identification Research: market segmentation, market potential, market share, sales analysis, sales forecasting, product and pricing research, promotion and distribution research.

Prescribed text

GD7038 Advertising Design 7
No. of hours per week: twenty-four hours for sixteen weeks
Prerequisites: Art Direction 6, Marketing 6, Copywriting 6, Storyboard 6, Media Technology 6

The major design course resumes an assigned project format and concentrates on the resolution of complex design problems that integrate verbal and visual concepts, consider marketing, budget and media factors, anticipate the involvement of artists, illustrators, photographers and filmmakers and apply research, problem-solving, communication and presentation techniques.

Eight major projects will be undertaken in the area of:
- corporate identity
- packaging and point of sale
- television advertising
- newspaper advertising
- magazine advertising
- magazine publications
- outdoor and promotional advertising
- photography and illustration.

GD8039 Advertising Design 8
No. of hours per week: twenty-four hours for one semester
Prerequisite: Advertising Design 7

Major projects will now approach campaign scale, encompass many factors and considerations, integrate copy and visual concepts and cross several media. Through these experiences students will become adept at presenting, discussing and planning linear concepts, copy ideas, marker pen layouts, comprehensive visuals, mock-ups, tapes and production schedules.

At this level the course becomes identifiable with the practising field of graphic design and advertising, and there is a high expectancy of creativity, appropriateness and professionalism in the solution of a range of complex communication problems. Contact with practising professionals as in Advertising Design 7, is maintained and supplemented by appropriate work experience.

The ultimate objective of the major study area is the production of a highly competent and individual portfolio of representative graphic and advertising design projects. This folio is gradually refined through a process of critical editing and revision, and will contain a broad cross-section of creative and practical design work approaching professional standards. The graduate portfolio is regarded throughout the
industry as the major criterion for evaluating the relative merits of a graduate designer. The standard of this folio has a significant influence on the graduate's career threshold.

**RG101 Assigned Projects 1**

No. of hours per week: twenty hours practical for two semesters
Prerequisite: nil
Assessment: continuous

Assigned projects refer to a co-ordinated work program with specific emphasis on an individual creative approach to solving communication problems principally of a graphic nature. Students are encouraged to develop their own personal style through soundly-reasoned, skilfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group assignments also allow students to develop a broader understanding and appreciation of other students' particular abilities.

A sequential program of applied design and communication projects is directed at developing a general awareness of visual aspects of the students' environment and facility for critical objective analysis.

Specific study areas include:

**Design**

The object is to equip students with a 'design vocabulary' to allow creative expression in areas of two and three dimensions. As the year progresses, design projects increasingly interact with drawing, photography and design for print. In this way students develop an appreciation and competence over a broad range of communication problems.

**Typography and Letterform**

This subject introduces students to the principles and practice of typographic design. Studies include calligraphy, letterform design, the historic derivation of type and the application of typefaces and letterforms in contemporary design. Methods of copy preparation and specification and the preparation of finished artwork for reproduction are also studied.

**Photography**

A comprehensive introduction to still-photography as a creative medium aimed at cultivating visual awareness through study of controlled lighting, spatial relationships, form, product and fashion photography, photo-journalism, photo-reproduction techniques (e.g. developing and printing), pictorial editing, various colour processes and costing.

**Design for print**

An introduction to print technology including reproduction of lettering, typographic and symbol design, illustration, and all aspects of production with particular emphasis on experimental work in offset lithography and screen printing.

**Drawing**

Expanding vision through assignments which develop control of drawing as a discipline for research and invention. Subject matter includes the figure, perspective, object drawing and natural forms.

Textbooks

* Students are advised not to purchase textbooks or references until classes commence.

**RG111 History of Arts 1**

No. of hours per week: three hours for two semesters
Prerequisites: nil
Assessment: continuous

This subject explores art and design, photography and popular culture ranging from Neo-Classicism and the Industrial Revolution through Romanticism, Arts and Crafts, Post Impressionism, Art Nouveau and Modernism to finally Dada and Surrealism and their attacks on the establishment. As well as studying the work of individual artists and designers the course looks at themes such as gender and class, and the impact of political and social theories, especially those of Marx and Freud.

The cross-over between Western and non-Western cultures are considered along with the themes of imperialism, nationalism and utopia in Australian and Japanese Art.

The assignments are designed to develop conceptual and analytical skills and consist of a combination of written, visual and oral components with an emphasis being placed on creativity.

**Recommended reading**

- Rosenblum, R. and Janson, H.W. Art of the Nineteenth Century
  London: Thames and Hudson, 1984

**RG120 Introduction to Critical Studies**

No. of hours per week: two hours for two semesters
Prerequisites: nil
Assessment: continuous

Emphasis is placed on exploring contemporary modes of criticism via film analysis. Various structural methodologies are developed through reading, lectures and class discussions. Feature films, shorts and commercials are screened. Lectures and discussions deal with the application of criticism to problems of directing and the analysis of film. Films are discussed in terms of art, technique and historical context. Students should be prepared to see prescribed films, undertake prescribed reading and present a critical and historical analysis of film in essay form.

**RG201 Assigned Projects 2**

No. of hours per week: twenty hours practical for two semesters
Prerequisites: RG140 Result of Studies 1
Assessment: continuous

This program constitutes a bridge between the formative studies of the first year and the closely-applied studies of third year. The aim of the second year is to bring the student to a professional standard of competence in the illustrative, typographic, written and oral presentation of ideas. in the arrangement of sequential information embracing publishing, advertising, sales promotion, merchandising and public relations, also for non-commercial areas such as education and community organisations. Study areas include -- design, photography, methods of production, computer-aided design, typography, history of arts and psychology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.
RG211  \textbf{History of Arts} 2
No. of hours per week: three hours for two semesters
Prerequisites: RG140 Result of Studies 1
Assessment: continuous

This subject explores the developments in art and design from the post World War II era through to Post Modernism and the 1980s.

The first semester concentrates on different theories of symbology and the manner in which visual imagery; painting, graphics, advertising, etc., use symbolic language to convey messages about the political, psychic, social and cultural values of our society. Current issues of design theory are also explored.

Second semester begins with Abstract Expressionism, moves on to Assemblage, Performance Art and Earthworks, explores the 1960s boom in Popular Culture, and looks at Post Modernist themes in art, design and architecture.

\textbf{Recommended reading}

RG220  \textbf{Critical Studies}
No. of hours per week: two hours for two semesters
Assessment: continuous

This subject aims to develop advanced skills in textual analysis; to identify, articulate and critique positions taken in current media debates and to encourage proficiency in oral presentation and argument.

Lectures and tutorials will interrogate cultural narratives and their formal supports in the print and electronic media, particularly in relation to the production and regulation of the social body.

RG301  \textbf{Assigned Projects} 3
No. of hours per week: twenty hours for two semesters
Prerequisites: RG240 Result of Studies 2
Assessment: continuous
N.B.: additional work required outside scheduled hours, including evenings and weekends

The final-year student is encouraged to move towards one of the main studies with the aim of producing solutions to advanced problems of communication design at a professional level, e.g. advertising design in various graphic media, publication design, corporate image design and educational technology. Special bias studies are offered, including photography, illustration; three-dimensional design, audio-visual and publication design.

RG303  \textbf{Industrial Year}
Two semesters industrial experience
Prerequisite: RG240 Result of Studies 2
Assessment: continuous

RG322  \textbf{Print Technology}
No. of hours per week: two hours for one semester
Prerequisite: RG240 Result of Studies 2
Assessment: continuous

Investigations into the theory and application of modern print technology. It is not intended that this course will go deeply into the electronics, mechanics or chemistry of printing, but rather explore the possibilities for design, production and distribution created by modern reproduction methods. These include type composition, photo-mechanical processes (offset, screen, letterpress and gravure), and studies of paper and other stocks.

This course will include the economics of production and relate to sections of the course in business administration.

Visits to production houses are arranged.

RG335  \textbf{Art and Design Culture}
No. of hours per week: three hours for two semesters
Prerequisite: RG240 Result of Studies 2
Assessment: continuous
N.B.: it is expected that for students to satisfactorily complete this subject, additional time will be required to visit galleries, exhibitions and performances

The study aims to facilitate a first-hand experience of art and design culture and the place it occupies within the functioning of our society.

Various levels of cultural experience, encircling the personal, the professional and the academic, will be explored. Regular outings to exhibitions, performances, films, seminars and public forums form a major component of the program.

As part of the assessment students will create an experiential diary consisting of a combination of written and visual elements.

RG410  \textbf{Assigned Projects} 4
No. of hours per week: twenty-one or twenty-four hours for two semesters
Prerequisite: RG341 Result of Studies 3
Assessment: continuous
N.B.: additional work required outside scheduled hours, including evenings and weekends

Working in a professional atmosphere, emphasis is given to developing the student's special capabilities through assigned professional projects or self-defined problems, culminating in a major design assignment.

RG490  \textbf{Design Management}
No. of hours per week: two hours for one semester
Prerequisite: RG341 Result of Studies 3
Assessment: continuous

The aim of this subject is to give students a general understanding of the business environment with an emphasis on management in the visual communication industry.

Specific course objectives are:
- To develop an understanding of graphic design management including setting-up and managing a design office, working with clients and graphic design project management.
- To develop skills in presentation and articulation of ideas.
- To gain experience in solving design management problems.
- To develop skills in written business communication and report writing.

Aspects of the theory is incorporated in assigned project work of the cooperative degree stream and the professional practice of the Graphic Design Centre (degree conversion). Students are required to submit two major written assignments based on information presented in the tutorials by the course co-ordinator and guest lecturers.
Industrial design

DP51 Bachelor of Arts (Industrial Design) (Prahran campus)

The objectives of the Bachelor of Arts (Industrial Design) are to:

- develop in students an awareness of the role of the designer;
- develop in students a progressive philosophy to advance Australia through innovation so that ideas are subject to creative lateral thinking;
- develop in students the ability to design, including the development of skills in design methodology, research, information-gathering and design synthesis;
- develop in students an awareness of current internationally competitive value-added processes such as simultaneous design and engineering for cost-effective product development (this will ensure that development time from concept to production will reduce product costs);
- develop in students at least one specific area of design to a level that is appropriate to the needs of Australian industry;
- assist students to develop methods of professional practice, skills and work habits which relate to the specialist area;
- enable students to develop a broad understanding of the technological requirements and the information resources available for the particular specialisation;
- assist students to achieve competence in the various communication skills necessary to present design ideas, including rendering and presentation drawing, technical drawing and illustration and model-making;
- develop in each student the ability to prepare design briefs, specifications and reports and to develop oral presentation skills;
- introduce students to the fundamentals of business systems (including related software) of interactive computer graphics, information storage and retrieval and computer-aided drafting;
- develop in students an appreciation of how factors like the law, government policies, economics and party platforms influence design decisions and national prosperity and how these factors relate to industry;
- develop in students an appreciation of design history, with emphasis on each student's particular specialisation;
- prepare students to meet the professional standards of the Design Institute of Australia and the International Council of Societies of Industrial Design.

Course outline

The Bachelor of Arts (Industrial Design) course structure comprises seven study groups of major and related studies that cover course work in seven areas:

- Industrial Design
- Technology
- Communication Studies
- Information Resources
- Workshop Techniques
- Professional Studies
- History of Art (Design)

These areas are subdivided into units which interrelate. Throughout the eight semesters groups of units form prerequisites for subsequent and sequential units. To qualify for the Bachelor of Arts (Industrial Design) a student must complete a total of thirty-four units.

Course structure

The academic year is divided into two semesters each of fifteen weeks' duration. The thirty-four units are taken in the four-year, eight-semester course as follows:

First year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours/week</th>
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<td>ID1901 Engineering Drawing 1</td>
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Fourth year

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<td>ID8031 Industrial Design 8B</td>
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Various levels of cultural experience, encircling the personal, the professional and the academic, will be explored. Regular outings to exhibitions, performances, films, seminars and public forums for a major component of the program. As part of the assessment students will create an experiential diary consisting of a combination of written and visual elements.

**ID1901 Engineering Drawing 1**
- No. of hours per week: three hours for one semester
- Prerequisite: nil

Details of the program are as follows:
- engineering drawings (to AS1100 and C21 manuals)
- basic geometry: ellipses, helix, involutes
- details of machine elements
- details of screws, fasteners and weld
- introduction to tolerancing, including: linear, bilinear, limits/holds, geometric tolerancing
- requirements of drawings: title blocks, detail, assembly, specification, installation drawings
- metrology: micrometers, verniers, general methods used.

**CS1901 History of Art (Design) 1**
- No. of hours per week: two hours for one semester
- Prerequisites: nil

A survey covering the history of design and art movements from ancient times to the late nineteenth century, including relevant aspects of the culture, ideology and technology of the various phases. The way the development of technologies influenced design and the manner in which styles in design and the visual arts arise and interlink are also examined during the lecture and tutorial program.

**CS2902 History of Art (Design) 2**
- No. of hours per week: two hours for one semester
- Prerequisite: History of Art (Design) 1

Developing the first semester survey, the second semester deals with stylistic derivations and influences in art, architecture and design within recent times and focuses on the emergence of the designer as a separate entity. This will include the growth of individually designed products and innovative developments over the last century.

**CS3903 History of Art (Design) 3**
- No. of hours per week: two hours for one semester
- Prerequisite: History of Art (Design) 2

The study program of lectures and tutorials examines the post-war shift of international mainstream art and design interest to the North American continent. It also investigates the European situation, and how both regions influenced Australian artists and designers. The program then begins to focus particularly on the Australian situation, its background, intellectual and theoretical underpinning, and the development of Australian art, design and culture since World War 2.

**CS4904 History of Art (Design) 4**
- No. of hours per week: two hours for one semester
- Prerequisite: History of Art (Design) 3

Based on the previous semester, this unit makes a study of late twentieth century art and design and of issues of special concern to design students, such as the role of the designer in society. A comparative survey is also made of the design of a contrasting culture.

This unit offers an intensive analysis of selected influential international art and design movements of contemporary relevance and examines the ways they have affected design in Australia.

**CS5915 Art and Design Culture**
- No. of hours per week: three hours for one semester
- N.B.: it is expected that for students to satisfactorily complete this subject, additional time will be required to visit galleries, exhibitions and performances

The study aims to facilitate a first-hand experience of art and design culture and the place it occupies within the functioning of our society.
This unit covers perspective (one- and two-point). By means of lectures and demonstrations, the student is expected to achieve a thorough understanding of technical work. Quality of the line (ink) is stressed, as is the importance of perspective. Exploded assemblies are discussed and material displayed which will assist the student in rendering an exploded drawing.

**ID2902  Methods of Production (ID) 1**
No. of hours per week: three hours for one semester
Prerequisite: Engineering Drawing 1

The unit deals with basic production processes and an introduction to the variety of plastic materials available to the designer, and explores the potential and limitations of these materials. Further instruction is given in aspects of engineering drawing related to plastic products.

Materials and production methods are studied and are related to project work in the Industrial Design sequence.

Topics covered are as follows:
- Introduction to plastic materials: molecular structure, thermoplastics and thermosets
- Plastic materials: commodity thermoplastics, thermosets, engineering plastics, specialty plastics
- Processing plastic materials: extrusion, blow moulding, injection moulding, thermoflowing
- Designing with plastics: capabilities and limitation, shrinkage, draft angle
- Costing plastic components: process and materials selection
- Identification of plastics
- Testing plastics
- Joining plastics
- Finishing plastics
- Mould design.

**ID2908  Industrial Design 2**
No. of hours per week: twelve hours for one semester
Prerequisites: Engineering Drawing 1, Industrial Design 1, Perceptions, Technical Illustration 1, Workshop Techniques 1

This unit covers:
- Industrial Design
- Production Awareness and Methodology.

**Industrial Design**

In this component students revise the work produced in Industrial Design 1. A series of lectures is given and discussed, based on the psychological elements of design such as synaesthetics, order, progression, active and passive influences. An introduction to ergonomics is given, including several projects which allow the student to derive figures and statistics in areas where none or few exist. The student completes the semester with a thorough grounding in manual skills and basic techniques in model-making, woodworking, rendering and illustration.

**ID2915  Workshop Techniques 2**
No. of hours per week: three hours for one semester
Prerequisite: Workshop Techniques 1

This unit expands the studies of the capabilities of the various items of wood machining equipment already presented in Workshop Techniques 1.

Projects will emphasise timber specification and selection, marking out, timber joining techniques and decorative and applied wood machinery. Mass production where it relates to the design industry will be undertaken. Students will produce a series of four models representing typical product design projects.

**ID2921  Technical Illustration 2**
No. of hours per week: three hours for one semester
Prerequisite: Technical Illustration 1

Students will construct several three-point perspective grids for use through continuing technical illustration projects. The unit commences with preliminary lectures covering the use and understanding of reflections, textures and shading, and time is devoted to achieving finished work. Students are expected to execute finished drawings of three articles in different techniques.

**ID3903  Engineering Design 1**
No. of hours per week: three hours for one semester. Minimum of three factory visits
Prerequisite: Methods of Production (ID) 1

This unit gives students a practical introduction to workshop and production machinery. Students learn to use the department's machine shop equipment, which includes lathes, milling machine, measuring instruments, etc. Students become familiar with the capabilities and limitations of the department's lathes and milling machine by designing and producing a number of simple products.

The unit covers the following:
- Lathes (including practical exercises)
- Milling machines (including practical exercises)
- Shapers
- Planers
- Laser cutters
- Requirements of specification and tolerancing in relation to machine tools.

Casting processes:
- Uses of castings
- Sand casting
- Green sand
- Permanent moulds
- Skin dried moulds
- Loam moulds
- Furant moulds
- CO₂ moulds
- Metal moulds
- Rubber moulds.

**ID3909  Industrial Design 3**
No. of hours per week: twelve hours for one semester
Prerequisites: Methods of Production (ID) 1, Industrial Design 2, Technical Illustration 2, Workshop Techniques 2

The unit will begin to identify some areas of design specialisation in industrial design. The study of design...
methodology is the main subject covered and develops the problem-solving, communication, presentation and technical skills gained in the first year. These are further developed to a professional level and understanding. The unit attempts to introduce the student to the reality of production, costing specification, professional practice, visual and verbal presentation of projects. Projects to emphasise that working to a deadline, methods of presentation, engineering drawing and specification, artwork, when applicable, are integral and important components of industrial design. Briefing, debriefing and design meetings are held to formalise these aspects.

ID3922  **Technical Illustration 3**  
No. of hours per week: three hours for one semester  
Prerequisite: Technical Illustration 2  
This unit extends the studies commenced in Technical Illustration 2 and deals with presentation methods and techniques. The selection of appropriate methods of illustration and presentation for product or design type is discussed, demonstrated and practised.

ID4904  **Engineering Design 2**  
No. of hours per week: three hours for one semester. Factory visits and trade exhibitions  
Prerequisite: Engineering Design 1  
At this level of the engineering program, students continue to develop their engineering skills through a series of tutorials and demonstrations relating to detail drawing and the detailed measuring analysis of existing components, assemblies and sub-assemblies. Specification becomes an ever more important aspect of these studies. Metrology, basic machining principles and other practical work is carried out in the model workshop. Calculation, measurement and tolerancing are all applied in machining exercises. These exercises also apply the requirements of engineering drawing to the practical requirements of machine processes.

ID4910  **Industrial Design 4**  
No. of hours per week: twelve hours for one semester  
Prerequisites: Engineering Design 1, Industrial Design 3  
Students continue their involvement in the various design specialisations to gain experience in their specific requirements. The assignments set during this semester follow on from those in Industrial Design 3 and identify sequentially the major stages in any design project. Emphasis is placed on design systems, design methodology and approaches to problem-solving. These stages are presented by lecture and expanded upon during discussions. Understanding is tested by project and experimentation is encouraged and a variety of approaches is fostered. Students produce models and prototypes appropriate to a project. The economics of design and the problem of producing ideas is expanded.

**Industrial Design Specialisation**  
The options are:  
- general industrial design (non-specific)  
- artifacts  
- exhibition and display  
- work environments  
- furniture  
- transport.

**ID4915  Professional Practice for Designers**  
No. of hours per week: three hours for one semester  
Prerequisites: Engineering Design 1, Industrial Design 3  
This unit has been designed to give a reasonable, practical knowledge of the profession. It is run on a lecture and tutorial basis and concentrates on the commonsense aspects of such matters as ethics, codes of conduct, professional bodies and what the professional bodies offer to the practising designer. Instruction is given in report and letter writing, accounting practice and costing of fees. Reference is made to topics such as personnel administration, executive training, patents and trade mark applications.

**ID4923  Technical Illustration 4**  
No. of hours per week: three hours per week for one semester  
Prerequisite: Technical Illustration 3  
In this unit students work towards producing a folio of at least five renderings or illustrations and a graphic communication project.

The basic knowledge built up through Technical Illustration 1, 2 and 3 is developed more fully in regard to industrial design presentation techniques using materials such as: poster paint, canson paper, marker pen, crystalene paper, airbrush, pastel and bank papers, dyeline prints.

Types and methods of folio construction, use of cover papers and mount boards are explained.

**ID5024  Methods of Production (ID)**  
No. of hours per week: three hours for one semester  
Prerequisite: Engineering Design 2  
The unit consists of a balance of theory and practical work. Practical information is imparted to the student by developing the engineering inputs necessary for detailing Industrial Design project work.

Engineering information is represented as an expansion and detailing of that presented in previous units:

- engineering design: mechanics, levers, specification  
- engineering model shop: metrology, machining practices, project development, component detail drawing  
- materials and theory of design: design applications, limits of materials, design calculations, tables and reference books, standards  
- production processes: major manufacturing processes and finishes, factory visits and study of designated process.

Tutorials expanding the mathematics necessary for computer programming and the various programming languages are given. This prepares the student for computer study electives and establishes an understanding of what the computer can do for the designer.

**ID5028  Industrial Design 58**  
No. of hours per week: twelve hours for one semester  
Prerequisites: Engineering Design 2, Industrial Design 4, Professional Practice for Designers  
Students will elect to work with a staff member whose experience relates to their design specialisation. The staff member assists in identifying an area of specialisation and developing suitable industry contacts.
This unit expands in greater detail the work covered in previous semesters, including professional work habits, design skills and methods of communication. To achieve this, students must elect to specialise and find external projects (preferably of a community nature, yet related to their specialisation) and also carry out educationally developed projects, up to six per semester.

**Computer Applications for Designers (ID) 2B**

No. of hours per week: three hours for one semester  
Prerequisite: Technical Illustration 2

This unit is related to the Industrial design major unit and is aimed at showing the potential of microcomputers for data storage, data manipulation, use of applications software and computer graphics.

The unit is introduced through a series of creative and applications programs which allow students to input data collected and developed during the Technical Writing elective. Word processor and related software is used to prepare documents.

Students will be encouraged to develop their writing techniques and will be required to become competent in the use of at least one applications program. The program may be one that is suitable for use in preparing documents for the Technical Writing unit. A written description of how the program operates will have to be presented, together with an operating disk that demonstrates an understanding of the use of the program.

- Operating systems such as MS DOS, PC DOS and Unix will be explained.
- Students will use word processing, database, graphics, accounting spreadsheet and desktop publishing application programs.

**Technical Writing**

No. of hours per week: five hours for one semester  
Prerequisites: Professional Practice for Designers, Engineering Design 2

This unit is a related subject and details some of the topics mentioned in the Professional Practice for Designers unit.

Topics covered include: research methods, market research, product evaluation, developing a technical library (including methods for classifying and retrieving information) and other information resources.

The unit also covers various aspects of technical writing. These include: report-writing, specification writing, technical writing (including service and operating instructions), brief preparation and writing, writing of patents applications and design registration.

Research work dealing with advanced data for design projects will be carried out during the practical periods of this unit. Assignments for this unit will include oral and visual presentation of research material.

**Materials/Processes (ID) 1B**

No. of hours of week: three hours for one semester  
Prerequisite: Methods of Production (ID) 2B

In this unit, the study of materials presented in previous semesters is covered in greater detail. The historical development, production processes used in the manufacture, specification and sources of various materials are discussed. Mechanical and physical properties of materials: ferrous/non-ferrous metals; plastics (various types, reinforcement, fillers, suitability for various applications); timber; pulpwood materials; paper; concrete; masonry.

**Industrial Design 6B**

No. of hours per week: twelve hours for one semester  
Prerequisites: Methods of Production (ID) 2B, Technical Writing, Computer Applications for Designers, Designers, Government and the Law 1

Students will continue to work within their identified specialist design area, on project work of a substantial nature determined and dependant on the scope and scale of project work undertaken.

The project work may be entrepreneurial or by direct consultation between staff and industry. At least one project from an alternate area of design must be completed.

**Computer-Aided Drafting (CAD)**

No. of hours per week: three hours for one semester  
Prerequisite: Computer Applications for Designers

Students will be made aware of the types of systems available and the advantages of a CAD system/workstation. A number of software packages will be available to students and the advantages/limitations of each will be assessed.

The unit will also demonstrate the operating language necessary for the system. Through demonstration, the student will become aware that computer-aided drafting is a tool and not a replacement for draftspeople.

The technological and social implications of computer-aided drafting will be discussed.

**Ergonomics**

No. of hours per week: five hours for one semester  
Prerequisites: nil

In this unit, the student will be presented with topics that show how anthropometric data is gathered and how ergonomic data is prepared from this.

Projects will also show how ergonomic data can be applied. Students will be encouraged to apply this information and the meaning of percentiles and samples. Also the selection of ergonomic data to be used when designing for children, the handicapped and data required in the design of work environments will be detailed.

**Entrepreneurship**

No. of hours per week: four hours for one semester  
Prerequisites: Professional Practice for Designers, Industrial Design 4, Engineering Design 2

Application of a systematic, reasoned and critical analysis of business environments and definition of worthwhile and viable opportunities.

Participants will learn how to:

- set up a new business venture and run it successfully
- develop the capacity to innovate in effective ways
- apply key concepts and techniques to the development of new products
- develop a business plan
- develop a marketing strategy
- understand the legal structure and taxation implications
- understand technology issues with respect to innovation and invention, licensing products, patents, design registration and trademarks.
ID7026  **Materials/Processes (ID) 2B**  
No. of hours per week: six hours for one semester  
One-hour lecture, two-hour tutorial, three hours research and/or industry contact  
Prerequisite: Materials/Processes (ID) 1B

Through a series of lectures and tutorials, the state and potential of Australian industry will be introduced. Terms such as 'sunrise industries', 'technology transfer', 'just in time production' and new industry or government initiatives will be discussed. The potential of these initiatives is to be reinforced through a series of excursions to firms using the latest materials and technology and attendance at seminars and conferences that relate to the student's specialisation. Students will be encouraged to establish contact with manufacturers, materials and component suppliers to develop an appreciation of the practical requirements of their project work. As part of this appreciation, students will be expected to develop a file of technical literature, brochures and trade magazines, as well as maintain contact with technical sales representatives. When necessary, staff will assist in making contacts.

ID7030  **Industrial Design 7B**  
No. of hours per week: fifteen hours for one semester  
Prerequisites: Industrial Design 6B, Ergonomics, Computer-Aided Drafting, Designers, Government and the Law 2

This semester covers the application of work habits and skills developed in previous semesters. The synthesis of information learned and developed in earlier related and elective units is expected. Application of research material commenced in the previous semester will begin to occur. (Some projects will not be completed until the final semester.) Work carried out will have to be fully documented and detailed and students are assisted by staff and visiting professionals through tutorials, seminars and discussions. Development of ideas includes the production of a prototype and/or other suitable methods for testing or communicating a design solution.

Students are expected to establish contacts with materials, component and equipment suppliers. They will be required to communicate effectively with manufacturers, technical sales personnel and other professionals.

ID8027  **Materials/Processes (ID) 3B**  
No. of hours per week: six hours for one semester. One two-hour tutorial, four hours research and/or industry contact  
Prerequisite: Materials/Processes (ID) 2B

In the final semester, contact with industry relevant to the student's area of specialisation will become even more important. Individual and group tutorials will guide students in their own special interest as well as maintaining an overview of the latest materials, componentry and technology available in Australia and overseas. Students will be encouraged to discuss their findings in group sessions with staff and other students. This will give practice in the oral presentation of complex material to others. Tutorials, excursions and individually generated visits to industry will form the major requirement of his unit.

Attendance at relevant industry, trade and professional seminars and conferences will be encouraged.

Students will be expected to continuously upgrade their specialist (and general) information files, bibliographies and sample collections.

ID8031  **Industrial Design 8B**  
No. of hours per week: fifteen hours for one semester  
Prerequisites: Industrial Design 7B, Materials/Processes (I)D. 2B

The final semester will be the culmination of the synthesis and development of work from earlier semesters. Students will be expected to have reached a level commensurate with professional practice where they are in continuous contact with the profession and the industry involved with their area of specialisation.

Projects, when presented, will consist of:
- design brief,
- development program (calendar),
- research material,
- development work (including additional research),
- design proposals (including specifications),
- technical drawings,
- presentation drawings,
- prototype, test models, form studies,
- specifications,
- project evaluation paper, prepared after the project has been presented and discussed. Staff will assist in this regard.

B.A. (Industrial Design) students will be required to prepare a folio of their work and arrange for suitable display to present their work to the external assessor(s) and academic staff.
Centre for Animation/Interactive Multimedia

The Centre was established in 1992 to provide a focus for professional training and research relevant to the needs of the animation and interactive multimedia industries.

**Graduate Diploma in Animation/Interactive Multimedia**

* Quota — 12 students

**Assessment**

First semester: internal assessment of completed assigned projects.

Second semester: the major component of the course is the creation of a published and distributable end product. Assessment is based upon the evaluation of the resulting published work rather than the formal process of its realisation. Assessment of the major work or portfolio of work(s) will be made by an external assessment panel composed of professional practitioners representing the various facets of the course. The assessment panel is the final arbiter on deciding the pass or failure status of any student portfolio of work.

**General and copyright conditions**

Students are requested to ensure that their productions conform to formal copyright, publication rights, agreements and censorship obligations.

Swinburne University is the copyright holder of curriculum works and reserves the right to retain any work executed by students as part of their course studies. Work not required may be claimed by the student after final assessment and public exhibition. The original authors may retain rights to their material eg. script, music, character design or computer software etc. conditional upon a written agreement from Swinburne.

**Course aims**

The primary objective of the course is to provide professional training and to foster the development of artistic and creative talent through practical production. In the course of the year, students are expected to produce a substantial body of published work for examination and exhibition. The course has a strong alliance with industry, the foundational training is based upon the heritage of animation and the motion picture arts, the course recognises and facilitates R&D and the new opportunities for artistic expression and employment created by changing technology in the new media industries. The course acknowledges that the quality of any program is largely determined by the conceptual and realisation skills of the writer/director/editor. Formal script writing classes are conducted during the first semester to help students develop personal projects for production later in the year.

The course also seeks to formally establish foundation craft skills in production through exposure to a wide range of genres and techniques and to the history and culture of the motion picture and interactive media arts: eg. traditional animation, experimental, object animation, special effects, 2D and 3D computer animation, interactive production and computer games.

The course intends to lay the foundation for persons wishing to undertake further advanced study at MA and PhD level at the Centre or in association with other faculty disciplines.

**Eligibility**

Applicants are initially required to submit responses to tests set each year by the lecturing staff. These tests follow the example below:

1. Write a short engaging narrative on a given topic.
2. Convey a dramatic theme through a sequential series of images.
3. Outline a proposal for a personal project suitable for possible production in the second semester.

Following the assessment of the tests, selected applicants are asked to attend an interview where they are required to:

1. Present a portfolio of work which provides evidence of artistic and creative abilities.
2. Demonstrate an awareness of the requirements and goals of the course and where their training is likely to lead.
3. Provide academic reports.

Selection tests and interviews are conducted between October and November each year.

Applicants usually will have taken a first degree or diploma in any discipline. The distinguishing qualities being sought are innovation and creativity. Experience in one or more of the creative arts areas is considered to be a desirable asset in any applicant eg. motion-picture, music, theatre, graphic design, publishing, radio, visual arts. Whilst computer-based production equipment and application programs are used widely within the course, formal computer programming skills are not required for the use of these facilities.

Mature age entry applicants, some who are not graduates, may be considered for admission if they can demonstrate substantial industrial experience in related fields or can demonstrate their creative and artistic abilities through a substantial portfolio work.
Course structure
1 year full-time
Semester 1
AIM1 Assigned Projects as set by lecturers
Semester 2
AIM2 A personal portfolio of published work(s)

Hours per week
The course is formally 28 hours per week (4 days, 9am-5pm). In practice, however, the need for access to rostered production studio facilities usually extends this period considerably. Students are alerted to the fact that a high level of extra-curricular time is required, particularly during the production-intensive second semester.

Course resources
Swinburne provides an extensive range of in-house analogue and digital production facilities, cinefilm, video, computers, software and post-production equipment and assists with production costs.

In addition, professional industry facilities and resources are hired as required. Budget expenditure is determined by the individual student's proposal, subject to departmental approval. Students also have access to state-of-the-art equipment of the National Centre of New Media Arts and Technologies — a joint Victorian Education and Industry funded project.

Personal resources
Applicants are reminded that this is a production-based course and that they will be expected to make personal financial contributions to see their projects to completion.

Access to the following personal production facilities is highly recommended:
- Audio cassette recorder/player.
- Personal computer and modem (integrated business software, e.g. MS Works).
- Video cassette player.
- VHS or Hi8 camcorder.
- 35mm stills camera.

References (basic list)
Blair, P. and Foster, WT. How to Animate Film Cartoons
Soloman, C. and Stark, R. The Complete Kodak Animation Book. Eastman Kodak Company
Thomas, F. and Johnston, O. The Illusion of Life. Abbeville Press

Application forms
These are available from the Administrative Officer, Centre for Animation/Interactive Multimedia and must be returned by the date specified thereon. Telephone: (03) 819 8117, Facsimile: (03) 819 8562.
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**Assessment Regulations**

At time of printing, the assessment regulations are under review by the University’s Academic Board. A copy of the revised assessment regulations will be available at re-enrolment in December and at enrolment in February.

**Preamble**

The aims of these regulations are to safeguard academic standards, to ensure that assessment relates to the objectives and content of the courses taught, to enable students to have reasonable redress in cases where they may feel that an injustice has been done, and to ensure the prompt approval and accurate documentation of all results.

The Academic Board believes that a variety of forms of assessment should be accepted for courses at Swinburne University of Technology to enable faculties to select those they consider most appropriate to each course. No attempt has been made herein to specify appropriate procedures for the facilitation of learning, the evaluation of course content, or determining course objectives, methods of instruction and assessment as these matters are the prerogative of each faculty.

1. **Definitions and interpretation**

   **Assessment categories**
   
The range of results which may be issued for a subject.

   **Award**
   
   Includes the degrees of Doctor of Philosophy, Master and Bachelor, and the awards of Graduate Certificate, Graduate Diploma, Diploma and Associate Diploma awarded by the Swinburne Council to persons who have completed a course of study at Swinburne University of Technology.

   **Awarding department**
   
The department of Swinburne University of Technology which has the overall responsibility for a particular Swinburne award and includes a ‘faculty’ where that responsibility is taken at the faculty level.

   **Head of awarding department**
   
The person responsible for the academic leadership and administration of the awarding department. In the case of an award being within the responsibility of a faculty rather than department it means the dean of that faculty.

   **Awarding faculty board**
   
The faculty board responsible for making recommendations to the Swinburne Council for the grant of a particular award.

   **Chief Examiner**
   
The Chief Examiner is the Vice-Chancellor of Swinburne. Responsibilities of Chief Examiner are, for the time being, delegated to the deans of the awarding faculties.

   **Course**
   
   A set of subjects the completion of which leads to the student being eligible for the grant of an award by the Swinburne Council.

   **Convener**
   
The person designated to convene meetings of the particular subject panel established under section four of these regulations.

   **Examination**
   
The formal testing of all students enrolled in a subject during a period specified by the Academic Board for the purpose of examination subject to the control of the Registrar through his designated officer and for which a result must be produced, published and recorded on the student’s record.

   **Examinations notice-board**
   
   A public notice-board on the Swinburne campus designated by the Registrar for the purpose.

   **Examinations Officer**
   
The member of staff of the Registrar’s Department who is responsible for the day-to-day administration of examinations.

   **Faculty board**
   
   Includes any properly constituted sub-committee of a faculty board authorised to approve results for a subject.

   **Head of teaching department**
   
The person who holds the position of head or chair of the department at Swinburne University of Technology which is responsible for the teaching of a particular subject.

   **Irregularity**
   
   An irregularity is the unauthorised use or attempted use by or for any student of any means to gain an unfair advantage in any examination, test, assignment, essay or other work, the marks for which form part of the final assessment. It includes taking actions contrary to the instructions for such examination or work; taking into an examination any material with the intention of using it to obtain an advantage.

   **Student**
   
   A person who is enrolled in any subject or subjects offered by Swinburne University of Technology whether formally enrolled for a course or not.

   **Subject**
   
   A course of study by whatever name known (including ‘unit’) within a particular discipline which is recorded in a register of subjects maintained by the Registrar. A subject has a unique code number and a title and is recorded in the register as being taught for a number of weeks (duration).

   **Subject panel**
   
   A panel of members of the academic staff of Swinburne University of Technology established under section four of these regulations.

   **Student Administration Office**
   
   Room AD109 in the Administration Building.

   **Teaching department**
   
   The department of Swinburne University of Technology which has the responsibility for the teaching of a particular subject.

   **Teaching faculty board**
   
   The board of the faculty within which the department responsible for the teaching of a particular subject is located.

2. **The objectives of assessment**

   These regulations shall, in any question of interpretation, be read subject to the following objectives:

   2.1 For the purpose of these regulations the main functions of assessment are:
2.1.1 the facilitation of learning which includes such matters as:
(a) helping to establish learning situations appropriate to the needs, abilities and potentialities of the individual student;
(b) enabling the diagnosis and alleviation of specific learning difficulties;
(c) motivating and directing learning experiences;
(d) developing and maintaining skills and abilities.
One of the most effective ways of facilitating learning is to provide the student with feedback, that is, to let the student know, as soon as possible after they are discerned, any specific errors, misunderstandings and shortcomings, and then to assist in overcoming them.

2.1.2 the certification of the level of achievement which students have reached in subjects and/or courses at Swinburne University of Technology;
2.1.3 assistance with the evaluation and review of course content and objectives;
2.1.4 assistance with the evaluation and review of methods of instruction.

2.2 Although these regulations concentrate chiefly on the certification aspect of assessment, the Academic Board considers that the other functions of assessment stated in section 2.1 above are of even greater importance in the educative process.

3. Forms of assessment
3.1 Without limiting the generality hereof, assessment of students enrolled in a subject may be undertaken in any of the following, or any combination of the following:
3.1.1 examination at the conclusion of the duration of the subject;
3.1.2 formal or informal tests conducted at any time from the commencement of the subject to the end of the examination period designated under these regulations;
3.1.3 assignment, project work, field work, essay, report or such other activities as the subject panel shall see fit.

4. Subject panels
4.1 For each subject for which a result is required there shall be a subject panel (hereafter called the panel) comprising at least two members of the academic staff of Swinburne University of Technology.
4.2 The panel shall be appointed by the head of the teaching department not later than the end of the second week of the semester in which teaching of the subject commences for that particular year.
4.3 The panel shall be reported to the teaching and awarding faculty boards for noting, in the case of subjects commencing in the first semester, no later than the April meeting of the faculty boards and, in the case of subjects commencing in the second semester, no later than the August meeting of the faculty boards.
4.4 The dean of the awarding faculty or head of the awarding department, where such faculty or department is not also the teaching faculty or department, may nominate one person to be a member of a panel for courses for which he or she is responsible.

4.5 The panel shall, subject to these regulations:
4.5.1 After consultation with the head of the teaching department:
4.5.1.1 determine, prior to the issue of the first test or assignment or test for the subject of the year, the form or forms of assessment to be used;
4.5.1.2 determine the assessment categories to be used for the particular year.
4.5.2 Ensure that each panel member and each person teaching the subject is familiar with the content and objectives of the subject.
4.5.3 Determine the minimum standards which a student must reach or specific work which a student must complete in order to be notified to a faculty board as a passing candidate in the subject.
4.5.4 Ensure that all students enrolled in the subject are informed of the procedures for assessment including minimum attendance requirements and allocation of marks for the subject, prior to the issue of the first assignment or test for the subject for the year.
4.5.5 Be satisfied as to assessment solutions or statements prepared by or for the convener under section 4.6.6 prior to the issue of the particular assignment or test.
4.5.6 Determine whether electronic calculators may be used in an examination or test and, if so, the level of sophistication of the calculators which may be used and whether or not the room supervisors shall indicate on a candidate's examination script that a calculator has been used.

4.6 The convener of the subject panel shall, subject to these regulations:
4.6.1 Ensure that the Registrar is notified, in writing, of the form of assessment to be used for the subject and semester.
4.6.2 Ensure that the Registrar is notified, at least one week prior to the commencement of the examination period for the semester, of any subject for which pass/not pass results only are required.
4.6.3 Ensure that assessment for the subject is conducted.
4.6.4 Allocate and supervise the drafting of examination papers and assignments as required by the subject panel.
4.6.5 Ensure that all examination and test papers for the subject are error-free prior to their issue to candidates.
4.6.6 Be empowered to require written solutions to assessable materials, or a statement of minimum qualities acceptable for assessment purposes from the teaching staff responsible for writing or otherwise determining a part of the assessment.
5. Candidature

5.1 Candidature for assessment is established by the recording of an approved enrolment in the appropriate subject(s) (i.e., no separate application is required to sit for an examination). No result can be given in a subject for which the student is not formally enrolled.

5.2 A student who withdraws from a subject within nine weeks of the commencement of the examination period of the semester in which the final assessment takes place shall be deemed to have failed that subject unless special permission has been given by the dean of the awarding faculty and the result shall be recorded as "Not Pass because of late withdrawal" (NWD). No student may withdraw from a subject after the commencement of the examination period in which final assessment takes place.

5.3 The teaching faculty board may specify minimum requirements for attendance at classes, lectures, tutorials, and practical sessions in order for a student to be eligible for a passing grade in a subject.

5.4 It is the responsibility of a student to become familiar with the subject attendance requirements and methods of assessment adopted for each subject undertaken; enquiries should be directed to the convener of the appropriate subject panel.

5.5 Students requiring extra time

Subject convenors may make special arrangements for students with temporary or permanent disabilities. Applications for such arrangement (including extra writing time) should be made to the Examinations Officer. If possible, such applications should be made before the date set down for the notification of timetable changes.

6. Examination

6.1 Examination period

The Academic Board shall, on the advice of the Registrar, designate a period of time in each semester during which period any and all examinations shall be held.

6.2 Timetables

6.2.1 Approximately half-way through each semester a provisional timetable for examinations to be held during the semester's examination period will be posted on the examinations notice-board. It is the responsibility of students to note their examination times and report immediately any clashes to the Examinations Officer.

6.2.2 The final examination timetable will be posted on the examinations notice-board approximately two weeks prior to the beginning of the examinations. It is the responsibility of students to note dates and times of examinations.

6.2.3 No information on examination timetables may be given over the telephone by a member of the Swinburne staff.

6.3 Conduct of examinations

Unless otherwise stated on the examination timetable, the following arrangements will apply:

(a) candidates for morning examinations will begin writing at 9.15am. A period of reading time prior to 9.15am may be allowed. The examination timetable will show the period of reading time.

(b) candidates for afternoon examinations will begin writing at 1.45pm. A period of reading time prior to 1.45pm may be allowed. The examination timetable will show the period of reading time.

In (a) and (b) above the examination will be deemed to have commenced at the time candidates began writing.

Except for the completion of any identification materials as may be required by the Examination Supervisor, no writing or marking of examination material shall be permitted during a period of reading time.

Electronic calculators may not be used during reading time.

Students will not be permitted to enter the examination room after thirty minutes have elapsed from the commencement of the examination, and will not be permitted to leave during the first thirty minutes nor during the last fifteen minutes of the examination.

At the end of the examination students are required to remain seated until the room supervisor has collected all scripts and University material. Unless expressly prohibited by the subject panel, electronic calculators may be used. Such calculators must be battery operated.

Students are required to provide their own calculators, and drawing instruments. Students will not be permitted to borrow or lend any equipment or material during an examination.
6.4 Examination discipline
When an apparent irregularity is observed in an examination room, the student will be informed immediately by the supervisor but will be permitted to finish the examination paper. The Examinations Officer will immediately report the circumstances to the Chief Examiner, the subject convener, and the heads of the appropriate teaching and awarding departments.

At the conclusion of the examination the Chief Examiner will decide whether or not there has been an irregularity. If it is the decision of the Chief Examiner that there has been an irregularity, a meeting of the following persons will be convened:
(a) the student concerned;
(b) the subject convener;
(c) and the heads of the awarding and teaching departments;
to decide whether any penalty shall be imposed upon the student. The maximum penalty for cheating or other examination irregularity is that the student be permanently excluded from further study at the University and if any penalty is imposed the student shall be notified in writing.

A student shall have the right of appeal as to the finding of the Chief Examiner and/or the penalty to a committee appointed for the purpose by the Vice-Chancellor.

The Appeals Committee shall consist of five persons, of whom:
(a) one shall be the nominee of the Chief Examiner;
(b) one shall be a student of the University nominated by the President of the Student Union;
(c) one shall be the convener of the subject or his nominee;
(d) two shall be nominated from the academic staff of the University;
provided that no member of the Appeals Committee shall have been a party to the original investigation.

7. Results
7.1 Result categories
7.1.1 The following assessment categories only may be used to record a student's performance in a subject:
- High distinction (HD)
- Distinction (D)
- Credit (C)
- pass (P)
- Not pass (N)
- Not pass — late withdrawal (NWD)
- Not pass — no attempt (NA)

7.1.2 Where it is not appropriate for results in a subject to be issued through the full range of categories authorised by these regulations, two categories only shall be used:
- Pass (P)
- Not pass (N)

If this provision is used a statement shall be included in the published results to the effect that only one category of satisfactory achievement was awarded in the subject concerned.

7.1.3 The following notations are applicable in special circumstances:
- Special exam (SPX)
- Deferred (DEF)
- Continuing (CON)
- Exempt (EXM)

7.1.4 In courses in engineering and applied science for which block passing schemes have been approved by the Academic Board the following results only may be used for 'Faculty Result' subjects:
- Pass (P) where all individual subjects have been passed;
- Faculty pass (FP) where one or more subjects have been failed but the student is permitted to proceed to the next stage without being required to repeat the subject or subjects failed;
- Not pass (N) where one or more subjects have been failed and the student is required to repeat all or some of the subjects undertaken in the stage for which the faculty result of 'Not pass' was obtained.

7.2 Processing results
7.2.1 The convener shall submit the following to the head of the teaching department:
7.2.1.1 The results recommended for each student enrolled for the subject;
7.2.1.2 Such statistics as are required by the head of department and faculty board:
7.2.1.3 A signed subject report in a form approved by the awarding faculty board, including:
- certification that these regulations have been carried out;
- statement of the assessment procedure followed;
- copies of all examinations, tests and assignments;
- where appropriate, copies of solutions or statements of minimum qualities; and
- an appraisal of the subject as a whole.
7.2.2 Before recommending the results to the awarding faculty board the head of department shall ensure that a review has been carried out of the work of all candidates who are recommended as having failed a subject, or whose results are borderline to an assessment category.

7.2.3 The head of department shall recommend to the awarding faculty board results of all enrolled students for approval.

7.2.4 After faculty board has approved the results, the head of department shall arrange for the entry, by the convener, of the results on the official result sheets; for the transcription to be checked and for the official result sheets to be delivered to the Student Administration Office.

7.3 Deferred results

7.3.1 A deferred result may be granted only by the faculty board and then only when special circumstances justify the grant of an extension of time for the completion of work prescribed for the subject before a student's result in that subject is finalised.

7.3.2 When a deferred result has been granted, the result must be finalised in readiness for notification to the awarding faculty board by a date to be fixed by the board, not later than two months after the date of publication of the deferment. The student and the subject convener shall be advised of the date and conditions set for the finalisation of the result.

7.3.3 Any extension of the period of deferment must have the prior approval of the dean of the awarding faculty who shall fix an alternative date by which the student must have completed the requirements of the subject. Details of the extension granted and the reasons for it shall be notified to the next meeting of the faculty board.

7.3.4 As soon as the final result has been determined, the subject convener shall submit an Alteration to Result form, via the head of department, to the dean for onward transmission to the faculty board.

7.3.5 The Student Administration Office shall notify the dean of the awarding faculty of any deferred result which has not been finalised within two months of the date of publication of the deferment. The faculty board must deal with the matter at its next meeting.

7.4 Continuing notation

The notation 'continuing' may be used:

(a) in those subjects in which enrolment will normally extend for more than one year;
(b) in cases where a result is determined on submission of a report or thesis; and
(c) in cases where a student may be required to extend his or her enrolment in a subject for longer than the normal duration of the subject without a failing result being recorded for the earlier period of enrolment.

The notation 'continuing' will appear on the official examination result certificate issued to students, with a note that, in the normal course of events, re-enrolment in the next semester will be required and that no final result will be issued until the end of that semester.

7.5 Publication and withholding certification

7.5.1 Except by resolution of the awarding faculty board and provided in section 7.5.6, results of assessments in a subject shall be published within two weeks of the end of the examination period nearest to the conclusion of the subject. In the case of a faculty board resolving to publish results after the normal publication period the Academic Board shall be advised of the proposed publication date and the reasons for the later publication.

7.5.2 The Student Administration Office is the only official source for the publication and certification of results.

7.5.3 Official publication of results shall be by their display in a pre-designed place on the Institute campus on the date or dates announced by the Registrar for the release of that particular semester's or year's results.

7.5.4 No results will be given over the telephone.

7.5.5 A certificate of results for the particular semester will be produced and made available to every enrolled student.

7.5.6 No certification of current or past academic results will be produced or made available to any student or previously enrolled student or to any other person on behalf of a student or previously enrolled student of the University who has failed to return outstanding materials borrowed from the University Library or who has failed to pay any fine or imposition relating thereto, or who has any other outstanding commitment to the University, after notice to that effect had been posted by the Registrar to the student at the address most recently recorded in the University records for the particular student.

7.6 Reports

Any student may, on application to the Faculty Office within thirty days of the publication of the result of assessment for a subject, and after payment of the fee prescribed, obtain a detailed report by the examiner on any material formally assessed.

Fees for such reports shall be determined from time to time by the Vice-Chancellor.

(ACCESS TO EXAMINATION SCRIPTS AND MARKS FOR EACH QUESTION WILL BE AVAILABLE ON REQUEST AND WITHOUT FEE.

Enquiries regarding marks or access to scripts should be made directly to the appropriate department or faculty.)
7.7 Alteration to results
Any alteration to an examination result (whether finalising a deferred result or altering a published result) which is submitted within two months of publication of the original result, may be approved by the dean of the awarding faculty as chair of the faculty board. An Alteration to Result form shall then be forwarded, via the Secretary, to the Faculty Board, to the Faculty Office. The Secretary shall record the details of the alteration and the reasons for it on the agenda of the next faculty board meeting. The faculty board will receive the alterations for noting. The Faculty Office will take action on the dean’s signature.

Where an alteration to examination result, other than finalising a result for which an extension of time to complete has been granted under section 7.3.3 or 8.4, is submitted more than two months after publication of the original results, the alteration must be approved by the awarding faculty board before the Alteration to Result form is forwarded to the Student Administration Office.

8. Special examinations
8.1 A special examination may be granted by the Chief Examiner:

8.1.1 Where a student is absent from the whole or part of an examination due to illness or other misadventure. Application under this clause, accompanied by evidence of inability to attend, must be lodged at the faculty office not later than midday of the third working day after the day of the examination; or

8.1.2 Where a student has obtained a pass category in all subjects except one for an undergraduate qualification and has presented for examination in the penultimate semester, a subject which was not again available in the final semester. Application under this clause must be lodged at the Student Administration Office not later than midday on the seventh working day after the date of publication of the results of the subject in the final semester.

8.2 Special examinations granted in accordance with section 8.1 must be notified to faculty board at its first meeting after the granting of the special examinations and the student and subject convener advised.

8.3 When a special examination has been granted the result must be finalised in readiness for notification to the awarding faculty board by a date fixed by the faculty board, but no later than two months after the date of publication of the original result.

8.4 Any extension of that period must have the prior approval of the dean of the awarding faculty who shall fix an alternative date by which the special examination must be finalised. Details of the extension granted shall be notified to the next meeting of the faculty board.

8.5 The subject convener must submit the result of the special examination to the head of department in time for it to be approved by the dean of the awarding faculty before the due date. The dean shall notify the result to the Student Administration Office and the faculty board.

8.6 The Student Administration Office shall notify the dean of the awarding faculty of any results which are outstanding for more than two months from the date of publication of the original results. The faculty board must deal with the matter at its next meeting.

9. Retention of assessed examination work
The head of department shall arrange for the retention of all examination scripts for a period of three calendar months after the publication of results. The head of department shall arrange for the storage of copies of a representative sample of all assessed material (including examination scripts) for all subjects taught by the department for a period of at least twenty-four months after the publication of results.

10. Special consideration
A student whose work during the academic year or whose performance in an examination or other assessment has been affected by illness or other serious cause may lodge an Application for Special Consideration with the Registrar. This will be considered by the subject panel concerned. An application for special consideration must be accompanied by appropriate evidence such as a medical certificate, a letter from a student counsellor, etc.

Applications should be lodged at the faculty office not later than midday on the third working day after the conclusion of the day of the examination. Where no examination is held, application must be made before the end of the first week of the examination period. No application will be considered after the publication of results.

11. Appeal
Any student or group of students has the right of appeal to the head of the appropriate teaching department about any aspect of the assessment procedure in any subject. Such appeal shall be lodged within sixty days of publication of the results in that subject, unless otherwise agreed by the Chief Examiner.

Credit Transfer Policy

This policy applies to credit transfer for formal prior learning. A further policy statement will be issued shortly following the development of the University’s Recognition of Prior Learning model relating to informal learning.

1. It is Swinburne University of Technology’s policy to grant the maximum possible level of credit for students who have been admitted to the University’s programs. This overarching policy will be implemented under the following more specific credit transfer principles and guidelines.

1.1 The University will ensure that current and prospective students are aware of their rights to credits for prior studies through the following publications and information systems:

(a) The University Handbooks will include the latest available information on approved credit transfer agreements at the time of publication.
1.6 The published information will indicate to prospective students that eligibility for credit does not automatically guarantee them a place in the course in which that credit would be available.

1.7 Where prerequisite prior knowledge is required, the University will establish an appeal system for students to appeal against a Faculty’s or School’s decision within the framework of the above policy and principles of the University’s credit transfer.

1.8 The University is committed to the granting of credit to students of the University will indicate to their level of performance and qualification.

(b) Credit transfer information will be made available on the University’s Management Information Systems (MIS) and distributed throughout the University and outside bodies, including Job and Course Explorer (JAC).

1.2 Information will be included for partial completion of an award as well as full completion of prior studies ranging from Advanced Certificate to Degree level.

1.3 The published information will indicate to prospective students that eligibility for credit does not automatically guarantee them a place in the course in which that credit would be available.

1.4 The University is committed to the granting of credits to students in a timely manner, that is, no later than 31 March. (As far as students from the TAFE Division are concerned, it is the University’s expectation, with the full development of the MIS, that credits will be granted in an automated manner to those students from the TAFE Division who are accepted into articulated degree programs; no applications will be required for this process. For other students, a pro forma or credit transfer application form will be provided to the students by the Registrar prior to enrolment so that the matter can be finalized as far as possible at the time of enrolment. It is acknowledged that in these cases the application will need approval by the Faculty/School concerned.)

1.5 The credit granted to students of the University will be normally at the highest level consistent with their chances of success in the course and will be at least at the level of recommended for national implementation in specified fields of study by the Australian Vice-Chancellors’ Committee.

1.6 As far as possible the Faculties/Schools will grant block credit or specified credit which should allow the recipient to shorten the time taken to complete the course.

1.7 Where prerequisite prior knowledge is required, the Faculties/Schools will publish advice to prospective students through the Handbook on ways in which requirements can be met, including any bridging courses, conversion units and the like which are available, particularly, during the summer semester.

1.8 The University will establish an appeal system through its Faculty Boards (Higher Education) and School Boards (TAFE), consistent with current appeals mechanisms within the University to ensure that student rights are protected with respect to this matter. This mechanism should allow any students to appeal against a Faculty’s or School’s credit transfer decision within the framework of the above policy and principles of the University’s credit transfer.

1.9 All Faculties/Schools will aim to ensure that the student load targets in terms of TAFE articulated enrolments are achieved by the management units consistent, in the short term, with the Pathways agreement with the State Government and, in the longer term, with DEET profiles plans. This will however depend on demand from students, and their level of performance and qualification.

1.10 The Faculties and Schools will determine the maximum credit to be granted for their programs. In the Higher Education Division, students must undertake the final two academic semesters (equivalent to one academic year) of study at the University before taking out their awards.

General grievance procedure for students

1. Policy

1.1 Swinburne Council adopted an Equal Opportunity Policy in 1984. The policy affirms commitment to the principles of equal opportunity with regard to employees of, and applicants for employment within Swinburne, and to students admitted to, and prospective students of Swinburne.

1.2 The policy and its successive amendments stipulate that there shall be no discrimination on the grounds of sex, marital status, disability, race, religious or political beliefs, age, sexual preference, or being a parent, childless or a defacto spouse.

2. Definition of terms used in grievance procedure

2.1 Grievance: a complaint presented by an individual, or a group, based on the opinion that they are, or have been, receiving treatment that differs from the treatment received by other individuals or groups.

2.2 Discrimination:

a) Direct Discrimination — any decision or action which specifically excludes a person or group of people from a benefit or opportunity, or significantly reduces their chances of obtaining it, because a personal characteristic irrelevant to the situation is applied as a barrier.

b) Indirect Discrimination — attitudes and assumptions which are incorporated into rules, policies and practices, that appear to be neutral or to treat everyone equally, but may in fact disadvantage one group.

2.3 Status or Private Life: The Victorian Equal Opportunity Act 1984 stipulates that no person shall experience discrimination on the grounds of that person’s status or private life. ‘Status’ refers to a person’s sex, marital status, race, impairment, being a parent, childless or a defacto spouse. ‘Private Life’ refers to the holding or not holding of any lawful religious or political beliefs and engaging or refusing to engage in any lawful religious or political activities. The Act applies to education and employment.

2.4 Complainant: person who lodges a grievance.

2.5 Respondent: person who it is alleged undertook the behaviour which resulted in the grievance.

2.6 Grievance Procedure: a prescribed set of actions to be followed when a grievance is presented.
3. Behaviour or actions which give rise to a grievance

3.1 A grievance arises when a student cannot obtain redress through normal channels for what he/she considers to be unfair or different treatment. Such treatment may occur in course assessment, or in classroom behaviour and interactions.

3.2 A grievance may include behaviour outlawed by the Victorian Equal Opportunity Act, the Federal Racial Discrimination Act or the Federal Sex Discrimination Act, such as discrimination on the basis of sex or marital status, or racial harassment.

A separate grievance procedure exists to handle cases relating to sexual harassment.

4. Resolving a grievance

4.1 In the first instance, the student should discuss the complaint where relevant, with the lecturer (Higher Education Division), member of teaching staff (TAFE Division) or member of administrative staff in an attempt to resolve the complaint.

4.2 If the grievance cannot be resolved in this way, the student may then raise the matter with the Head of Department.

4.3 Where a student has a complaint against a member of staff who is also the Head of Department, or in a case where the student feels that to approach the Head of Department is not appropriate, the student may take his/her complaint to the Dean or Head of School. The Dean or Head of School will carry out the role otherwise assigned to the Head of Department, in these grievance procedures.

4.4 The Head of Department will discuss the complaint with the student and advise the student where documentation describing the grievance procedure is available.

4.5 If the student's preference is for internal resolution of the complaint, the Head of Department will take a written record of the complaint on a pro forma grievance form. It will contain:

a) the name of the complainant;

b) the name of the person(s) against whom the complaint is made;

c) the date the complaint is made;

d) the date(s) the behaviour resulting in the grievance took place;

e) a brief description of the nature of the complaint;

f) a summary of follow-up actions taken.

The complainant will read and sign the grievance form as being a true record, after making any appropriate alterations.

4.6 No written record shall be taken or any further action initiated, if the complainant is not willing to name the respondent or does not permit the Head of Department to enter into a conciliation process with the respondent.

4.7 In cases where complaints are made by a class (two or more students) concerning academic or teaching staff, the complainants will not be named and the Head of Department may proceed with conciliating and resolving the complaint.

4.8 With the agreement of the complainant, the Head of Department will then attempt to resolve the grievance with the member of staff named in the complaint through informal discussion and conciliation.

5. Conciliation and resolution

5.1 The Head of Department will meet informally with the respondent for the purposes of:

a) outlining the grievance and naming the complainant (except as covered by Clause 4.7);

b) making a written record of the respondent's reply to the complaint, which is signed and considered a true record;

c) attempting to reach an agreement with the respondent that is acceptable to the complainant;

d) attempting to ensure that there are no reprisals taken against a student who has made a complaint in good faith;

e) outlining the requirements of State and Federal Government anti-discrimination legislation or Swinburne Council policy, where relevant;

f) advising the respondent that another staff member will be nominated to re-assess the student's written work in complaints relating to course assessment.

5.2 If the grievance is successfully resolved to the satisfaction of the complainant the informal procedure will cease at this point.

5.3 The written record of the informal complaint will be retained for a period of twelve months in a confidential file in the office of the Head of Department.

6. Re-assessment of submitted work or examination paper

6.1 If the complaint concerns assessment of written work which includes assignments, reports or exam papers, the Head of Department may after discussing the complaint with the staff member named as the respondent, nominate another staff member to re-assess the student's work.

6.2 In the case where the respondent is also the Head of Department, the Dean or Head of School, acting as the student's contact person may nominate a member of staff from another discipline or a member of staff from the same discipline in another institution to undertake a re-assessment of the student's work.

7. Follow-up actions

7.1 The Head of Department will meet with the student each semester for a period of twelve months following successful resolution of the complaint, to ensure that retaliatory actions were not taken against the student by virtue of the complaint.
7.2 The Head of Department will ensure wherever practicably possible, that work presented by the complainant will be marked independently for the period of one year, following successful resolution of the complaint.

7.3 Where the student is subjected to retaliation he/she may approach the Head of Department or Head of School or Dean where appropriate and an investigation will be instituted.

7.4 Where a member of staff is found to have retaliated against the student, disciplinary procedures will be instituted. Such disciplinary action may be taken against the member of staff complained of in the original complaint or any other member of staff undertaking retaliatory action.

8. Formal procedure

8.1 If a grievance cannot be successfully conciliated by the Head of Department to the satisfaction of the complainant, the complainant may instruct the Head of Department to proceed with a formal complaint.

8.2 All formal complaints will be presented to the Appeals Committee.

8.3 The Appeals Committee will comprise:
   a) the Vice-Chancellor's nominee from within the Chancellery, who shall act as the Chair;
   b) a representative of either the TTUV, SASO, or ACUSA, depending upon the constituency of the respondent; and
   c) a representative of the Student Union.

8.4 The written reports, compiled by the Head of Department and signed by the complainant and the respondent will be forwarded by the Head of Department to the Chair of the Appeals Committee.

8.5 The complainant or the respondent may submit any other written material to the Committee in support of their case. Any additional evidence so provided, should first be submitted to the other party or parties named in the complaint.

8.6 The Chair of the Appeals Committee will advise the Manager, Equity Unit if the grievance includes allegations of behaviour outlawed under State or Federal Government anti-discrimination legislation or Council Policy on Equal Opportunity.

9. Investigation of complaint

9.1 The Appeals Committee will investigate the grievance in the following manner:
   a) the Committee will meet within seven working days of the date the formal complaint is made and consider all written documentation including the written statements of the complainant and respondent and the written statements of witnesses;
   b) the Committee may call the complainant or the respondent to attend the meeting to explain any aspect of their written statement. If the complainant is required to appear before the Appeals Committee he/she may be accompanied by his/her Head of Department. If the respondent is required to attend he/she may be accompanied by his/her staff association or union representative. The complainant and respondent would not normally appear before the Appeals Committee at the same time;
   c) the Committee may call any witnesses who have submitted written statements concerning the grievance to appear before the Appeals Committee;
   d) if the complaint contains allegations of behaviour outlawed by Federal or State Government anti-discrimination legislation or Council Policy on Equal Opportunity, the Manager, Equity Unit will attend the Appeals Committee meeting and advise the Committee accordingly. The Manager, Equity Unit, will not have voting rights.

9.2 Following deliberations the Committee will make appropriate recommendations. Committee decisions will be achieved through consensus or agreement reached between all members.

9.3 The Committee will forward its written recommendation to the Vice-Chancellor together with documentation of the grievance. Actions which may be taken are limited to:
   a) not upholding the case;
   b) upholding the case and stating that the following be considered, where relevant:
      — reparation be made to the complainant for any loss of academic credit or achievement suffered as a consequence of the behaviour
      — re-admitting a student who has been excluded from a course
      — directing the respondent to undertake appropriate staff development programs
      — reprimanding the respondent
      — ensuring that the complainant is not subjected to retaliatory action by virtue of the complaint
   c) in the case where a grievance which concerned discrimination against a student on the grounds of status or private life being upheld, the following action may also be recommended:
      — suggesting that the respondent undertake counselling.

9.4 All grievances shall have undergone the process of a formal resolution within a period of three months of the receipt by the Chair of the Appeals Committee of the formal written complaint.

9.5 The complainant and the respondent will be advised in writing by the Chair of the Appeals Committee of the decision made within seven days of submission of the Appeals Committee's recommendation to the Vice-Chancellor.

10. Appeals

10.1 Either party shall have the right of appeal. The appeal should be submitted in writing to the Vice-chancellor within seven days of the receipt of the Committee's decision. The appellant shall be entitled to present new evidence or to re-argue his/her case.
10.2 The finding of such an appeal shall be communicated to the appellant within fourteen days of the appeal being lodged.

11. **Complaints of discrimination — external procedures**

11.1 In the case of a grievance being concerned with allegations of discrimination against the complainant on the grounds of that person's status or private life, the complainant has the right to present a complaint to the appropriate external authority.

11.2 Where internal grievance procedures are being followed, the complainant may wish to refer the matter to the appropriate external authority at any stage of the process, and in particular:

a) when no further action is taken;

b) when he/she may wish to appeal against the Committee's decision.

11.3 Where the matter is taken up with the external authority, the internal grievance procedure shall cease to apply in the case.

11.4 The appropriate external authority in the case of discrimination complaints is the Office of the Commissioner for Equal Opportunity in Victoria.

12. **Confidentiality**

12.1 Confidentiality will be strictly observed throughout the conciliation and resolution process. Information and records related to complaints will be considered exempt documents under Freedom of Information legislation.

13. **Record keeping and storage**

13.1 The written record of the complaint will be retained for a period of twelve months in a confidential manner.

13.2 Where all appeal mechanisms are exhausted or where the complaint is not sustained, written documentation of the case will be destroyed.

13.3 The Manager, Equity Unit shall have access to statistical information concerning discrimination related complaints.

14. **Conflict of interest**

14.1 If the Head of Department feels that to undertake conciliation of a complaint would place him/herself in the situation of a conflict of interest, the Head of Department will direct the student to take the grievance to the Dean or the Head of School.

14.2 A complainant may at any stage of the informal procedure seek the assistance of the Dean or Head of School if he/she believes a conflict of interest exists or may arise as a result of the complaint.

15. **Resources**

15.1 The complainant may at any stage of the grievance procedure approach where relevant, the following offices or persons for advice and/or support:

a) Student Union;

b) Swinburne Student Services;

c) Equity Unit.

15.2 Members of staff so contacted are advised to direct the complainant to his/her Head of Department.

15.3 The respondent may approach the staff association or union for advice and support.


**Statute for the degree of Master (by research)**

1. **Definitions**

In this statute:

- **Council** means the Council of Swinburne University of Technology;

- **University** means Swinburne University of Technology;

- **Faculty Board** means the sub-committee of the University's Academic Board called the 'Faculty Board' (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;

- **Head of Department** means the person appointed Head of Department or elected as Chair of Department responsible for studies in the particular discipline.

2. **Title of degree**

The degree of Master may be awarded in a field of study of any faculty of the University. Degrees shall be designated as follows:

- Master of Applied Science
- MAppSc

- Master of Arts
- MA

- Master of Business
- MBus

- Master of Engineering
- MEng

3. **Grading of degree**

The degree of Master shall be awarded in one grade only.

4. **Admission to candidature**

4.1 **Entry requirements**

A person wishing to be admitted to candidature shall have:

4.1.1 qualified, at a sufficiently meritorious standard, for a degree of the University (in a field relevant to the work proposed) or such other degree as the Faculty Board may deem equivalent for this purpose; or

4.1.2 qualified for an award judged by the Faculty Board to be of relevant character and appropriate standard; and have experience which the Faculty Board deems to be a suitable preparation for the applicant's proposed field of study.

4.2 **Application**

No application for admission to candidature may be approved by the Faculty Board except with the support of the Head of Department.

4.3 **Supervision and facilities**

An applicant shall be admitted to candidature only if the Faculty Board is satisfied that the proposed program is a suitable study in the discipline or area concerned and that adequate facilities and supervision are available.

5. **Program**

The candidate shall carry out a program of research, investigation or development involving the submission of a major thesis embodying the results of that program carried out during the period of candidature in:
5.1 a department or other recognised unit of the University, or
5.2 industrial, commercial, governmental, educational or research organisations approved by the Faculty Board, or
5.3 a combination of 5.1 and 5.2.

In addition, a candidate may be required to undertake other formal studies as approved by the Faculty Board.

6. Duration
The candidate may undertake the program on a full-time or part-time basis. Excluding any periods of intermission as set out below, the duration of candidature shall be:

6.1 for a candidate whose degree under 4.1.1 or whose award under 4.1.2 involved less than four years full-time study (or its part-time equivalent): not less than twenty-one months and not, under normal circumstances, more than thirty-six months of full-time study;

6.2 for a candidate whose degree under 4.1.1 or whose award under 4.1.2 involved not less than four years full-time study (or its part-time equivalent): not less than fifteen months and not, under normal circumstances, more than thirty-six months of full-time study;

6.3 where a student undertakes the masters degree program (or any portion thereof), by part-time study, the maximum time shall normally be not more than seventy-two months.

After taking advice from the supervisor(s) and the Head of Department, the Faculty Board may grant a period of intermission of candidature on such conditions as the Faculty Board sees fit.

7. Supervision
For each candidate the Faculty Board shall appoint, on the recommendation of the Head of Department, and on such terms and conditions as the Faculty Board determines, one or two supervisors, one of whom shall be a member of the academic staff of the University.

If the program is carried out within the University, at least one supervisor shall be a member of the academic staff of the department in which the program is conducted.

Where two supervisors are appointed one shall be designated the Co-ordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the University. The Co-ordinating Supervisor shall have overall responsibility for the administrative conduct of programs. If for any reason a supervisor is unable effectively to supervise the candidate for a period exceeding three months, the Faculty Board shall, on the recommendation of the Head of Department, appoint a replacement supervisor.

8. Progress
At the expiry of twelve months from the date of admission to candidature and at such other times as the Faculty Board may decide, the Faculty Board requires a report on the progress of each candidate. The report is prepared by the supervisor (or, where there is more than one supervisor, the Co-ordinating Supervisor). Prior to the preparation of the report the supervisor (or Co-ordinating Supervisor) will be required to interview the candidate. The candidate will be given access to the report and will have the opportunity to comment to the Faculty Board on the supervisor's assessment of progress.

Where the Faculty Board is of opinion that a candidate's progress is not, prima facie, of a satisfactory level, a candidate may be required to show cause why candidature should not be terminated.

Failure on the part of the candidate to demonstrate satisfactory progress may result in the Faculty Board terminating candidature.

9. Thesis
9.1 Three copies of the thesis shall be submitted to the Registrar. At least two of the copies must be bound.

9.2 The thesis must be typed one and a half spaced, in English on A4 size paper, and conform to any other specifications prescribed by the Faculty Board.

9.3 One copy of the thesis shall, if passed by the Faculty Board, be lodged in the Swinburne Library, one shall be held by the department in which the work was done, and one shall be returned to the candidate.

9.4 With the Faculty Board's prior approval a candidate may submit work other than in the form set out in 9.2 and 9.3.

10. Examination
The Faculty Board shall appoint on the recommendation of the Head of Department and the Co-ordinating Supervisor, on such terms and conditions as the Faculty Board determines, at least two examiners in respect of each candidate's thesis. The candidate's supervisor shall not normally be appointed as an examiner. At least one examiner shall be external to the University.

The name of the examiners shall not, without the approval of the Faculty Board, be disclosed to the candidate. Each examiner shall provide a report to the Faculty Board on the standard of the candidate's thesis and recommend one of the following courses of action:

(a) that the thesis be passed;

(b) that the thesis be passed subject to the inclusion of minor specified amendments;

(c) that the thesis be returned to the candidate for major revision and re-submission within a specified period; or

(d) that the thesis be failed.

Each examiner should indicate whether the report is to be made available to the candidate in whole or in part.

11. Patents and registered designs
The patent rights or right to register a design for any device, process, chemical or the like which has been invented or developed by a candidate for the degree of Master by research in the course of the program being undertaken for the degree shall, unless otherwise determined by Council on the advice of the Faculty Board, be the property of Swinburne University of Technology.

12. Confidentiality
It is the Faculty Board's view that in general the public should have access to the material contained in a Masters thesis once the degree has been awarded. However, the Faculty Board recognises that where a program of research is carried out in or in conjunction with the type of organisation referred to in 5.2 above, the candidate, in order to pursue such a program, may
be given access by that organisation to restricted information which the candidate or the organisation does not wish to disclose freely. In such cases the Faculty Board must receive, in writing, from the organisation, notice of such materials and the reason why, in its opinion, disclosure would be undesirable. Where such material is involved the Faculty Board's prior approval is obtained, the candidate may submit a thesis in two volumes, one containing the general thesis, the second containing only the restricted data or information. The Faculty Board may restrict access to the second volume for a specified period. Where the thesis has only one volume, the Faculty Board, on receipt of a request in writing from the candidate and supported by a statement in writing from the Head of Department, may order that, for a period of up to three years from the date of that order, the copies of the thesis forwarded to the Swinburne Library and the department shall be made available only to researchers or readers specifically authorised in writing by the Faculty Board.

13. Copyright
Copyright in the thesis is the property of Swinburne University of Technology. Those rights, or any part of them, may be assigned by Council, on the advice of the Faculty Board, to the candidate.

14. Regulations
The Faculty Board may recommend to the Academic Board that regulations be made under this statute regarding the admission to candidature, reports on candidates during the period of candidature, the examination of candidates and related matters.

15. Change in statute
This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Faculty Board. In the event of an amendment being made subsequent to the beginning of a student's candidature, that candidate may elect to continue under the statute which was in effect at the time candidature began.

1. Definitions
1.1 General
Committee means the Higher Degrees Committee of the Academic Board;
Council means the Council of Swinburne University of Technology;
University means Swinburne University of Technology;
Faculty Board means the sub-committee of the University's Academic Board called the "Faculty Board" (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of Department means the person appointed Head of Department or elected Chair of Department responsible for studies in the particular discipline.

1.2 Publication
Publication is a major published paper, a collection of papers or a monograph. A publication must be based on original research, investigation or developmental work carried out by the candidate in an industrial, commercial, governmental, educational or research organisation, or carried out as a member of the staff of a college of advanced education provided that the subject and nature of the research work are accepted by the University as appropriate for examination of the award of the degree of Master.

2. Title of degree
The degree of Master may be awarded in a field of study of any faculty of the University. Degrees shall be designated as follows:

- Master of Applied Science (MAppSc)
- Master of Arts (MA)
- Master of Business (MBus)
- Master of Engineering (MEng)

3. Grading of degree
The degree of Master shall be awarded in one grade only.

4. Admission to candidature
4.1 Admission requirements
A candidate for a degree of Master by publication shall:

(a) have held for a minimum period of five years:
   (i) a degree of the University or of any other institution approved by the Committee for this purpose; or
   (ii) such other qualification or experience as might be accepted as equivalent to (i) above.

(b) submit to the University a publication or publications.

4.2 Application
No application for admission to candidature may be approved by the Committee except with the support of the appropriate faculty board.

5. For the purpose of assessing an application, the University shall require that any publication submitted in respect of the application:

(a) has been the subject of critical independent examination;
(b) is available to the general public; and
(c) where it consists of several papers, relates to one aspect of the same subject.

6. A report issued by an organisation shall not, without the express consent of the organisation and the University, be accepted as a publication for the purpose of this statute.

7. In the event of joint publication, the applicant shall provide the University with a written statement indicating the extent and nature of the applicant's personal contribution to the project. The applicant's statement should be countersigned by the joint author(s) and supervisor (where applicable), or a written statement should be provided by the joint author(s) and supervisor (where applicable).

8. The publication submitted should represent work which is considered by the appropriate faculty board to be the equivalent of two years full-time study.
9. A candidate shall normally be required to present at least one seminar to staff and students of the University on the subject of publication.

10. A candidate may not submit for examination work previously submitted for any previous academic qualification.

11. In the first instance three copies of the publication shall be forwarded to the Registrar of the University who shall request the Committee to assess whether the candidate and the publication presented conform to the guidelines numbered above (4.10) and are worthy of examination for the award of Masters degree by publication.

12. The publication submitted shall be in English; if the original publication is in a language other than English, a translation must be supplied.

13. If the publication is deemed worthy the Committee shall instigate the examination of the submission. The publication shall be examined by two examiners appointed in the same manner as those for the degree of Master by research. At least one of the examiners shall be external to the University.

14. Each examiner shall be asked to give an opinion as to whether the publication demonstrated:
   (a) a thorough understanding of the relevant field of study;
   (b) a high level of competence;
   (c) a discernable contribution in the field of study.

15. Each examiner shall assess the publication submitted as either:
   (a) pass, or
   (b) fail.

Publications which have been deemed to have failed may not be re-submitted.

16. If the examiners disagree, the Committee may appoint a third examiner and a majority view will determine the result; the candidate may be required to undertake an oral examination.

17. One copy of the publication, if passed by the Committee, shall be lodged in the University Library, and one shall be held by the department whose field of interest is closest to that of the candidate's work, and one shall be returned to the candidate.

18. This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee.

**Statute for the degree of Doctor of Philosophy**

1. **Definitions**
   In this statute:
   - Committee means the Higher Degrees Committee of the Academic Board;
   - Council means the Council of Swinburne University of Technology;
   - University means Swinburne University of Technology;
   - Faculty Board means the Sub-Committee of the University of Academic Board called the 'Faculty Board' (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
   - Head of Department means the person appointed Head of the Department or elected as Chairman of Department responsible for studies in the particular discipline.

2. **Grading of degree**
   The degree of Doctor of Philosophy shall be awarded in one grade only.

3. **Admission to candidature**
   **3.1 Entry requirements**
   A person wishing to be admitted to candidature shall have:
   - 3.1.1 qualified for the award of the degree of Master of the University (in a field relevant to the work proposed) or for the award of such other degree as the Committee may deem equivalent for this purpose; and shall have demonstrated to the Committee's satisfaction a capacity for research and investigational work in the area of study proposed; or
   - 3.1.2 qualified for an award judged by the Committee to be of relevant character and appropriate standard; and have experience which fulfills the requirements set out in 3.1.1.

3.2 A candidate who is enrolled for the degree of Master in the University may be permitted to transfer his/her candidature to the degree of Doctor of Philosophy after the completion of not less than twelve months (or its equivalent) of full-time research/coursework.

3.3 **Application**
   No application for admission to candidature may be approved by the Committee except with the support of the faculty board.

3.4 **Supervision and facilities**
   An applicant shall be admitted to candidature only if the Committee is satisfied, on advice supplied by the faculty board, that the proposed program is a suitable study in the discipline or area concerned and that adequate facilities and supervision are available.

4. **Program**
   4.1 The candidate shall carry out a program of research, investigation or development involving the submission of a major thesis embodying the results of that program. The program shall be one which will make a distinct contribution to knowledge and in the execution of it the candidate shall demonstrate a substantial degree of originality.

4.2 In addition, a candidate may be required to undertake other formal studies as approved by the Committee.

4.3 The program may be carried out in:
   - 4.3.1 a department of the University, or
   - 4.3.2 an industrial, commercial, governmental, educational or research organisation approved by the Committee, or
   - 4.3.3 a combination of 4.3.1 and 4.3.2.

4.4 A candidate wishing to undertake other studies in addition to any specified by the Committee under 4.2 must seek the approval of the Committee.
5. Duration
5.1 The candidate may undertake the program on a full-time or part-time basis. Excluding any periods of intermission as set out below, the duration of candidature normally shall be:
5.1.1 36 calendar months for a full-time candidate from the date of commencement.
5.1.2 72 calendar months for a part-time candidate from the date of commencement.
5.2 In the case of a transfer of candidature as set out in 3.2 the Committee shall determine what period of master's candidature shall count towards the candidate for the degree of PhD.
5.3 Where a candidate is permitted to transfer between full-time and part-time candidature the Committee shall determine the duration of candidature.
5.4 A candidate may pursue the program on a part-time basis only if the Committee is satisfied that the candidate is able to devote sufficient time to the program.
5.5 Where an applicant has been accepted as a doctoral candidate the applicant shall enrol in the University and pay the appropriate fees and charges.

6. Intermission
After taking advice from the supervisor(s) and the Head of Department, the Committee may grant a period of intermission of candidature on such conditions as the Committee sees fit. The total period of intermissions granted during candidature shall not exceed 12 months unless the Committee deems the circumstances to be exceptional.

7. Supervision
For each candidate the Committee shall appoint, on the recommendation of the faculty board, and on such terms and conditions as the Committee determines, one or two supervisors, one of whom shall be a full-time member of the academic staff of the University. If the program is carried out within the University, at least one supervisor shall be a member of the academic staff of the department in which the program is conducted.

Where two supervisors are appointed one shall be designated the Co-ordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the University. The Co-ordinating Supervisor shall have overall administrative responsibility for the conduct of programs.

If for any reason a supervisor is unable effectively to supervise the candidate for a period exceeding three months, the Committee shall, on the recommendation of the faculty board, appoint a replacement supervisor.

8. Progress
At the expiry of twelve months from the date of admission to candidature and at such other times as the Committee may decide, the Committee will request a report on the progress of each candidate. The report is to be prepared by the supervisor (or, where there is more than one supervisor, the Co-ordinating Supervisor). Prior to the preparation of the report the supervisor (or Co-ordinating Supervisor) will be required to interview the candidate. The candidate will be given access to the report and will have the opportunity to comment to the Committee on the supervisor's assessment of progress.

Where the Committee is of opinion that a candidate's progress is not, prima facie, of a satisfactory level, a candidate may be required to show cause why candidature should not be terminated.

Failure on the part of the candidate to demonstrate satisfactory progress may result in the Committee terminating candidature.

9. Thesis
9.1 Three copies of the thesis shall be submitted to the Registrar. At least two of the copies must be bound.
9.2 The thesis must be typed 1½ spaced, in English, on A4 size paper, and conform to any other specifications prescribed by the Committee.
9.3 One copy of the thesis shall, if passed by the Committee, be lodged in the Swinburne Library, one shall be held by the department in which the work was done, and one shall be returned to the candidate.
9.4 With the Committee's prior approval a candidate may submit work other than in the form set out in 9.2.
9.5 The thesis shall be accompanied by a certificate from the supervisor(s) stating that in their opinion the thesis is ready for examination.
9.6 When submitting the thesis the candidate must sign a declaration that the thesis has not previously been submitted for a degree or similar award at another institution.

10. Examination
The Committee shall appoint on the recommendation of the faculty board, on such terms and conditions as the Committee determines, at least two examiners in respect of each candidate's thesis. The candidate's supervisor shall not normally be appointed as an examiner. At least one examiner shall be external to the University.

The names of the examiners shall not, without the approval of the Committee, be disclosed to the candidate.

Each examiner shall provide a report to the Committee on the standard of the candidate's thesis and recommend one of the following courses of action:
(a) that the degree be awarded;
(b) that the degree be awarded subject to the inclusion in the thesis of minor specified amendments;
(c) that the degree be awarded subject to the candidate passing a written and/or oral examination in subjects related to the thesis;
(d) that the thesis be returned to the candidate for major revision and re-submission within a specified period;
(e) that an appropriate Masters degree be awarded;
(f) that the degree be not awarded.

Each examiner should indicate whether the report is to be made available to the candidate in whole or in part. In the case where an oral examination is requested by an examiner, such examination shall be held in accordance with procedures determined by the Committee.
In the case where the Committee, after considering the reports of the examiners, decides that the degree be awarded subject to the inclusion in the thesis of minor specified amendments, such amendments shall be made and submitted to the Registrar within three months of the candidate being notified of the Committee's decision.

In the case where the Committee, after considering the reports of the examiners, decides that the thesis be returned to the candidate for major revision, the revised thesis must be submitted to the Registrar within twelve months of the candidate being notified of the Committee's decision; the thesis may be submitted only once in its revised form and upon re-examination the examiners may recommend only that the thesis be passed or failed. Unless otherwise determined by the Committee the revised thesis shall be examined by the same examiners as performed the initial examination.

11. Patents and registered designs
The patent rights or right to register a design for any device, process, chemical or the like which has been invented or developed by a candidate in the course of the program being undertaken for the degree shall, unless otherwise determined by Council on the advice of the Committee, be the property of Swinburne University of Technology.

12. Confidentiality
In general the public should have access to the material contained in a doctoral thesis once the degree has been awarded. Where a program of research is carried out in or in conjunction with the type of organisation referred to in 4.3.2 above, the candidate, in order to pursue such a program, may be given access by that organisation to restricted information which the candidate or the organisation does not wish to disclose freely. In such cases the Committee must receive, in writing, from the organisation, notice of such materials and the reason why, in its opinion, disclosure would be undesirable.

Where such material is involved and provided the Committee's prior approval is obtained, the candidate may submit a thesis in two volumes, one containing the general thesis, the second containing only the restricted data or information.

The Committee may restrict access to the second volume for a specified period.

Where the thesis has only one volume, the Committee, on receipt of a request in writing from the candidate and supported by a statement in writing from the Head of Department, may order that, for a period of up to three years from the date of that order, the copies of the thesis forwarded to the University Library and the department shall be made available only to researchers or readers specifically authorised in writing by the Committee.

13. Copyright
Copyright in the thesis is the property of Swinburne University of Technology. Those rights, or any part of them, may be assigned by Council, on the advice of the Committee, to the candidate.

14. Regulations
The Committee may make or amend regulations under this statute regarding the admission to candidature, reports on candidates during the period of candidature, the examination of candidates and related matters.

15. Change in statute
This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee. In the event of an amendment being made subsequent to the beginning of a student's candidature, that candidate may elect to continue under the statute which was in effect at the time candidature began.
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