1995 Calendar

January
1 New Year's Day
3 Swinburne re-opens
26 Australia Day
31 H.Ed. and TAFE enrolment period begins for Round 1 offers through VTAC

February
6 TAFE Apprenticeship classes commence
13 H.Ed. teaching begins: Engineering (alternate entry and final year) and Arts (Honours)
TAFE non-VTAC classes commence
14 H.Ed. and TAFE enrolment period begins for Round 2 offers through VTAC
27 H.Ed. teaching begins: Applied Science, Arts (other than honours), Business, Design and Engineering (Year i-iv)
TAFE VTAC entry courses commence

March
13 Labour Day
31 H.Ed. last day for withdrawal from a first semester subject, unit or course without penalty*
H.Ed. Census date for HECS (semester 1)
H.Ed. and TAFE last day for applications for refund of General Service Fee
TAFE last day for variation to enrolments for semester 1 without penalty

April
12 H.Ed. classes end for Easter break
13 TAFE classes end for semester break
14 Easter Friday
17 Easter Monday
20 H.Ed. classes resume after Easter break
25 Anzac Day

May
10 H.Ed. Graduation ceremony
24 H.Ed. Graduation ceremony
30 H.Ed. last day for application for awards for students completing courses in semester 1, 1995

June
8 TAFE award ceremony
H.Ed. semester 1 examination period begins
12 Queen's Birthday
15 TAFE award ceremony
20 TAFE semester 1 examination period begins
23 H.Ed. and TAFE examination period ends
30 TAFE last day for applications for awards for students completing courses in semester 1, 1995
TAFE semester 1 ends

July
3 H.Ed., inter-semester break begins
H.Ed. Engineering (alternate entry) semester 2 classes begin
17 H.Ed., classes resume for semester 2

August
31 TAFE last day for subject variations to enrolments for semester 2 without penalty
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)

September
15 H.Ed. and TAFE classes end for mid-semester break

October
2 H.Ed., classes resume after mid-semester break
11 H.Ed., Graduation ceremony
20 H.Ed., last day for application for awards for students completing courses in December 1995

November
3 H.Ed., semester 2 examination period begins
7 Melbourne Cup Day
16 TAFE award ceremony
17 H.Ed., semester 2 examination period ends
20 TAFE semester 2 examination period begins
30 TAFE last day for application for awards for students completing courses in semester 2, 1995

December
1 TAFE semester 2 examination period ends
22 Swinburne closes for Christmas break

H.Ed.: Swinburne Higher Education Sector
TAFE: Swinburne TAFE Division
* Students should be aware that some schools have an earlier deadline for addition of new subjects. Students should consult their Divisional office.
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 Sector 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 Academic Registrar.

Equality of educational opportunity is Swinburne policy.

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

**Phone numbers**

From mid-1995 a new digit (9) will be added on the beginning of all Swinburne phone numbers (e.g. the Swinburne general enquiry number will become 9214 8911). Callers will still be able to access the old phone numbers until mid-1996.
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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 amigerous 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.
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 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 being a local provider of technical education into a multidisciplined, multcampus provider of higher education of national and international significance.

Swinburne was established as the Eastern Suburbs Technical College, by George Swinburne and the first students were enrolled in 1909, when classes began in carpentry, plumbing and blacksmithing. 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 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 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. Noted Australian businessman, Mr. Richard Pratt AO was installed as Swinburne's Foundation Chancellor on the 15 March 1993.

In 1994 the Higher Education Sector of Swinburne underwent a major restructure when the four faculties (Arts, Business, Applied Science and Engineering) and one school (The School of Design) were amalgamated into two divisions — The Division of Business, Humanities and Social Science and the Division of Science, Engineering and Design.

Swinburne today

Swinburne has a strong reputation in Australia and overseas as a provider of career orientated education and as a University with a commitment to research. The University maintains a strong technology base and important links with industry, 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, a program which places 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 enhancements a strategic priority for the University, and Swinburne is committed to the transfer of lifelong learning skills.

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. While focusing on its regional responsibilities, Swinburne is heavily involved in international initiatives and plays a significant part in the internationalisation of Australia's tertiary education system.
Teaching Sectors

Swinburne has two teaching sectors under the control of one Council: the Higher Education Sector and the Technical and Further Education Division (TAFE).

Higher Education Sector

The Higher Education Sector offers professional qualifications ranging from degrees of Bachelor to graduate qualifications (certificates, diplomas and degrees of Master and PhD).

The Higher Education Sector comprises two divisions: The Division of Business, Humanities and Social Science (which incorporates the previous faculties of Business and Arts) and the Division of Science, Engineering and Design (incorporating the previous faculties of Applied Science and Engineering and the School of Design).

A total of 9019 students were enrolled in the Higher Education Sector in 1994, made up of 5065 full-time students and 3954 part-time students.

Technical and Further Education Division (TAFE)

TAFE 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.

The TAFE Division is made up of three schools: The School of Business and Information Systems, the School of Engineering and Industrial Science and the School of Social Sciences and Arts.

A total of 12,217 students were enrolled into TAFE courses in 1994, made up of 2532 full-time and 9685 part-time students (excluding short courses).

Hawthorn Campus

General enquiries: 214 8911

Hawthorn is Swinburne’s original campus, offering a broad range of undergraduate higher education and TAFE courses in applied science, business, humanities and engineering. Most of Swinburne’s postgraduate courses are offered on this campus. The Hawthorn campus is also the site of many of Swinburne’s research and training centres.

Situated in the heart of Hawthorn, the campus has expanded from its original single building of 1908 to cover a sizeable area from Burwood Road to Park Street in the north, and across to Henry Street in the east. The second stage of Swinburne’s TAFE Division was officially opened on May 12 1994, a state-of-the-art building which complements the two TAFE buildings opened in 1991.

The Hawthorn campus offers a wide variety of short courses through the Centre for Business Development and Training, and also through the various schools, departments and centres of the Higher Education Sector and TAFE Division.

Students enjoy a full range of services and facilities including a library, bookshop, sports centre, cafeterias, health centre, childcare, counselling and careers advice centre. The Hawthorn Campus is located seven kilometres east of 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

Mooroolbark campus is located in the leafy outer eastern suburbs of Melbourne, and was established to increase tertiary education options for students in these outlying areas. Students enjoy an intimate atmosphere in an attractive landscaped setting, with all the amenities of a modern university.

The campus offers bachelor degree programs in the areas of business, applied science and social science. The Bachelor of Business offers majors in accounting, economics and marketing, while the Bachelor of Applied Science offers Management, Science and Computing and Computing and Psychology as two courses exclusive to Mooroolbark campus. The Bachelor of Arts offers major studies in media, psychology and sociology. Bachelor of Arts students can also study subjects from business or applied science programs at the Mooroolbark Campus.

The campus has a fully equipped undergraduate library with access to Hawthorn campus holdings, a cafeteria, student lounge, computer aided laboratories, and excellent social and recreational facilities including tennis courts and a swimming pool.

The campus is easily accessible by train with a connecting bus operating from Lilydale Station. There is also ample carparking on the campus.

Prahran Campus

General enquiries: 214 6700

Prahran campus (formerly Prahran College of TAFE) joined Swinburne University of Technology in 1992. It offers TAFE courses in business, social sciences and arts and higher education degrees in graphic and industrial design.

The School of Business and Information Systems, and the School of Social Science and Arts offer associate diploma, advanced certificate and certificate courses via full-time or part-time enrolment. In 1994 the Swinburne School of Design was permanently relocated to Prahran campus, expanding the range of graphic and industrial design courses to incorporate higher education degrees.

A large number of fee-for-service short courses are also offered in the areas of entertainment, arts, language, fitness leader, business, computing and information technology. External study options are also available through the Off-Campus Centre.

The campus is ideally situated in cosmopolitan Prahran close to the market, shops and cafes. It is small and friendly with a mixture of modern and historical buildings. Only five kilometres south of Melbourne, Prahran campus is easily accessible by train, tram and bus.
Information Systems
Pro Vice-Chancellor
H. Gunn, MSc, PhD(Otago), GradDipEDP(CIT), MBA(Deakin)

Computer Services and Information Technology
Manager (Acting)
A. Young, BEng, MEng, MIRIE

Learning Services
Director (Acting)
R. Philp, ABCTechCert

Library
Swinburne Librarian
F. Hegarty, BA(UniNewEng), DipLib(QIT), BEd(LaT), AALLA

International Office
Pro Vice-Chancellor
Professor L.A. Kilman, BA(Qld), MA(ANU), PhD(LaT)

International Student Unit
Director
I.A. McCormick, BComm(Melb), MAdmin(Mon), FASA, CPA

Research and Graduate Studies
Pro Vice-Chancellor
To be advised

Research Coordinator
J. Baird, BA(Hons), BLitt(Melb), MBA(RMIT)

Central Services
Facilities and Services Group
Director
N. Zorbas, BE(Hons)(WAust), MEd, MEngSc(Melb), FIEAust, CPEng

Maintenance and Engineering Officer
S. Blackburn

Property and Services Officer
D. Sharp

Planning and Projects Officer
S. Bartlett, BArch(Melb), RIBA, ARAIA

Finance Department
Manager
J. Vander Pal, DipAcct(PTC), BBus(SIT), AASA, CPA, RCA Systems Accountant
JF. Rayner, BSc(Melb), DipEd(Melb)

Divisional Accountant, TAFE: Division
P. Wilkins, BBus(VicC), GradDipAIS(CIT), AASA

Divisional Accountant, Higher Education Sector
P. Hotchin, BA(Deakin), GradDipBusAdmin(SIT), AASA, CPA

Human Resources Department
Manager
P.D. Mudd, BE(NSW), AFIAIM

Deputy Manager
A. McFarland, BA(LaT), GradDipBus(HRM)(VicColl)

Safety Coordinator
A. Skotnicki, BAppSc(FTT), GradDipIndHyg(Deakin)

External Relations
Director
B.C. McDonald, BCom, DipEd(Melb), FCPA

Head, Publicity and Information Unit
N. Manning, GradCertBusAdmin(SIT), PRIA, AIMM

Manager, Swinburne Press
L. Scheuch-Evans, BS in Foreign Service(G’town)

Academic Registrar’s Department
Academic Registrar
A. Grigg, BA(Hons), PhD(Otago)

Security Department
Chief Security Officer
N. Burge

Mooroolbark Campus
Manager
J. Wangeman, BCom, BEd, MA(Melb), MAppS

Coordinator, Administrative Services
J. Austin

Higher Education Sector
Division of Business, Humanities and Social Science
Pro Vice-Chancellor
Professor M.C. Frazer, BA(Deakin), BSc(Hons)(Mon), GradDipEdTert(DDIAE), MAdmin(Mon), PhD(Camb), AIMM, MAIE, MACE

Deputy Head of Division
D.G. Adams, BComm(Melb), MAdmin(Mon), TSTC Head, School of Commerce
Vacant

Head, School of Information Systems
J.A. James, DipMedRadiotherapy, GradDipDP(RMIT)

Head, School of International and Political Studies
D.Y. Mayer, LLB(Melb), GradDipEd(Haw), MA(Mon)

Head, School of Management
B. Cargill, BA(Melb), MAppS

Head, School of Social and Behavioural Sciences
Associate Professor K.J. Heskin, MA(Dub), PhD (Dunelm), CPsychol, AFPS, MAppS

Division of Science, Engineering and Design
Pro Vice-Chancellor
Professor J.G. McLean, BVSc(Syd), HDA(Hons), PhD(Melb)

Deputy Head of Division
R.B. Sandie, BSc, MEngSc(Melb), FIEAust, CPEng

Head, School of Biophysical Sciences and Electrical Engineering
D. Murphy, BE(Mon), MSc(Lond), DPhil(Oxon)

Head, School of Chemical Sciences
I.K. Jones, BAgSc, DipEd, PhD(Melb), FRCI

Head, School of Civil Engineering and Building
R.B. Sandie, BEng, MEngSc(Melb), FIEAust, CPEng

Head, School of Computer Science and Software Engineering
D.D. Grant, MSc(Melb), PhD(Reading)

Head, School of Mathematical Sciences
J.R. Iacono, BA(Mon), MEC, TPTC
Head, School of Mechanical and Manufacturing Engineering
M.D. Buley, BE(Chem)(Mon), DipMechEng(SIT), MSc(Aston), TTTC(TTC)

Head, The Swinburne School of Design
Professor Bob Miller-Smith, FCSQ, FASID, FRSA

TAFE Division
Director
P. Veenker, DipBus(Acc)(PCAE), BBus(SIT), MEdStud(Mgt)(Mon), TTTC(HIE), CPA, MACE
   Deputy Director (Operations)
G. Harrison, DipMechEng(CIT), BSc(Melb), TTTC
   Assistant Director TAFE Educational Planning and Services (Acting)
D. Bennett, BA, DipEd, BEd, MACE
   Assistant Director TAFE Administration and Information Services (Acting)
R. Conn, BBus(SIT), DipEd(Mon), ASCPA
   Manager, TAFE Institutional Development
Vacant
Senior Curriculum Development Officer
J. Sutherland, BEd, DipEd, GradDipAppPsy
   Executive Officer to TAFE Division (Acting)
J. Johnston, BSc(Ed)
   Head, FC Support Services
D. Williamson, CRE

School of Business and Information Systems

Head
G. Ryan, BSc, GradDipBus, DipEd, AACS
   Hawthorn campus
   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. Torsimer, BEd(Melb), GradDipBus(HRD)(Deakin), AIIMM
   Prahran campus
   Head, Finance and Administrative Studies
D. Tonkin, BBusStud(Rec), DipEd
   Head, Real Estate and Law
D. Sedgwick, BA, LLB, TSTC
   Head, Industry Training
G. Romuld, BEd, DipEd
   Head, Traineeships and Labour Market Programs
S. Henderson, BA, DipEd, BEd
   Head, Library and Information Studies
M. Hoffmann, BA, BEd, HDT, ARMIT, AALIA, BEd

School of Engineering and Industrial Science

Head
R. Fallu, BSc, DipEd(Mon)
   Head, Electrical and Electronics Technology Department
A.G. Hampton, TechCert(Electronics)(HI), BEd(Deakin)
   Head, Industrial Sciences Department (Acting)
J. Cashion, BSc(Melb), DipEd, DipCompSc, Grad AlP
   Head, Mechanical and Manufacturing Technology Department (Acting)
B. Stevens, DipMechEng(SIT), Dip Ed
   Manager, Centre for Engineering Technology
C. J. McLaughlan, Cert(Jig&ToolDraft), Cert(Toolmaking), TTrlC, DipTT(Haw)
   Manager, Industry Training Unit
C. De Martinis, BEd, MSc(Lat), GradDipOccHyg(Deakin)
   Manager, National Scientific Instrumentation Training Centre
G. Jordan, MPharm(VicCollPharmacy)
   Manager, Workplace Skills Unit
G. Cohen, BEd

School of Social Sciences and Arts

Head
J. Bissland, BA(Hons), GradDipChDev, GradDipEd, MA, MEd
   Deputy Head (Acting)
G. Arnott, BSc, BEd(Mon), GradDipBusAdmin(SIT)
   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
   Prahran campus
   Head, Adult Education
B. Brosnan, BA(Hons), MEd(Monash), DipTEFL(ILC Edinburgh)
   Head, Child Care Studies (Acting)
C. Forbes, TPTC, BA, BSc(Hons)(Mon)
   Head, Family and Community Studies
M. Juchnowski, BA, DipEd, MACE
   Head, Language and Community Programs
K. Hellyer, BA, DipEd, DipEng(Monash)
   Head, Arts (Acting)
P. Creed, BA(Hons), DipTeaching
Access Education Department

Compensatory Education
Individual assistance in English and mathematics is available to students enrolled in 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 for 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.

Swinburne University of Technology Alumni Association

Who are the Alumni?
The alumni are comprised of former students, former and current staff, and other friends of the Swinburne University of Technology.

What is the Alumni Association?
The Swinburne University of Technology Alumni Association enables you to stay in touch with the friends you made during your period of study or employment. The Alumni Office organises reunions and other functions and three times a year all alumni receive Swinburne News free of charge. In addition, you are given the opportunity to remain involved with your University. As the University’s reputation grows both in Australia and overseas, the value of your own qualification also increases.

The aims of the Alumni Association are as follows:

- to offer services and activities which meet the needs of alumni members;
- to provide forums for alumni to network with their peers;
- to encourage alumni to become involved in policy making and education issues within the University;
- to raise funds to support current educational programs, thus enhancing the University’s status and maintaining the continuing value of Swinburne qualifications.

Alumni wishing to have access to Swinburne’s many excellent facilities may, upon payment of a fee, become contributing members of the Association. Depending on the membership option chosen, contributing members are entitled to use the library, sports association, tool library and bookshop, and obtain discounts on training facilities at Swinburne’s Information Technology Institute.

For further information about the Swinburne Alumni Association, contact:

Jennifer Cookson,
External Relations
Telephone: 214 8705

(For information about chapter groups, consult divisional entries.)

Bookshops (Student Bookshop Co-operative Limited)

Manager
R. Wilkens, 214 8225

General enquiries
819 4266

Location
Hawthorn
The bookshop will be temporarily located in the old Graphic Design Building until the end of June 1995. It will then be relocated to the new Bookshop/Cafeteria building from the 1st July, 1995.

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 9.00am-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 noticeboard.

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. Members who buy shares and patronise the bookshop are in turn ensuring the Bookshop has an inflow of share capital for growth and 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 should be presented when making a purchase at the co-operative to receive your discount.

How to make the best use of the services offered by your bookshop
Familiarise yourself with the many services offered by your bookshop. Here is a convenient list for your information.

We sell:
- Text and references, novels, secondhand books and general interest books
- Full range of stationery supplies
- Full range of office supplies
- Gifts, cards, wrapping paper and novelties
- Audio and video cassettes
- Film and film processing
- Graphic and artist supplies
- Calculators and accessories
- Binding service for presentation of assignments etc.
- You are also able to sell your used and unwanted books through the bookshop

We suggest that if you are intending to purchase a required text or reference, you do so at the beginning of each semester. If you cannot afford to purchase it immediately, have it put aside. This will help to alert us to any possible shortages early in the semester. Top up orders can then be placed where necessary to ensure the book arrives in a time to be of use for that semester.

If you find the book is unavailable ask the staff when it will arrive and place a personal order at the information counter to secure a copy when supplies become available.

Chaplaincy
Chaplain
Rev. D. Rathgen, DipPublicSpkg(NZSB), LTh(JBTS), BA(Cantab)

Location
473 Burwood Rd., Room 201 (alongside Student Health Centre)
Telephone: 214 8499
Hours: Tuesday, Thursday 9.00am-5.00pm

Visiting Chaplains
Prahran campus:
Rev. Bruce Gallacher, 17 Cromwell Rd., Prahran. Phone: 826 3383; available at campus Thursdays and Fridays. Enquire via Student Union.

Mooroolbark campus:

Hawthorn campus:
Mr. Chris Gibson; Sister Cathy Skehan; available Monday, Wednesday, Friday. Enquire at 473 Burwood Rd., Room 201. Phone: 214 8489.

Chaplains are responsible for spiritual and religious affairs on all campuses. They are recognised and authorised by their respective Christian churches. They are available to all students and staff regardless of their religious affiliation or lack of it.

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 214 8489.

Child-care Centre
Coordinator
S. Somerville, 214 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 214 8519 or the Equity Unit on 214 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: 214 8509
E-mail: enquiries@swin.edu.au

Computer Services and Information Technology (CSIT) is the section of Information Services responsible for providing computing and communications services to the entire University community to support teaching, research and community objectives.

CSIT is customer focused and provides a range of direct customer services as well as supporting the underlying computing and communications infrastructure. A Network Access and Code of Practice document is available from the Help Desk to explain the services provided to users and the conditions governing their use.

Facilities
The facilities group, which includes a team of student cadets, is responsible for managing and maintaining the Computer Access Laboratories in the Engineering Building. Over 100 PCs are provided in the West Wing laboratory running a range of software packages for all University students and staff. Books, disks and mice are available for loan in the West Wing.

Facilities is responsible for all aspects of managing the West Wing such as evaluating and purchasing hardware and software and managing and maintaining printing facilities, backup and recovery and stock control. There is a student help desk located in the West Wing to provide software and hardware support to users of the laboratory. The West Wing help desk is operated by the cadets and is open whenever the West Wing laboratory is open.

Facilities also operate a small laboratory located in EN402 which is provided specifically for supervised teaching applications and must be pre-booked. For bookings contact Ken Tan. Telephone: 214 8382 or E-mail: Ken@stan.xx.swin.oz.au

Opening hours for the West Wing during teaching periods are:
Monday-Friday 8.00am-9.30pm
Saturday 12.00pm-5.00pm
Sunday 1.00pm-5.00pm

The West Wing is not open every weekend so please phone 215 8574 to check before coming in.

PC Support Services
CSIT manage a central PC support service. This service provides first level hardware maintenance and software support for Macs and PCs in the Higher Education Sector TAFE Division and Corporate Services.

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.

For PC support contact the Help Desk on 214 5222,
E-mail: Helpdesk@buster.c.c.swin.edu.au

System Support Services
The System Support Group manages the IBM AS/400 which supports Swinburne’s Management Information System (MIS). The centrally controlled mainframe IBM 3090 was decommissioned in 1994. All administrative work which used to operate on this machine has been converted, as part of the MIS, to run on the AS/400 thus putting the University’s whole administrative workload onto this system. This involves the management of applications which support student records, finance, human resources and physical resources. The group also provides performance monitoring and capacity planning for these systems with access provided to all teaching departments and corporate divisions.

The group also supports two UNIX based Encore Multimac systems. One of these systems is dedicated to providing the electronic cataloguing and borrowing system (DYNIX) from 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.

System Support is also responsible for a group of RISC 6000s for the CIM centre. These power PCs support engineering packages such as CATIA and Lusas.

Network Services
Managing the University’s data network infrastructure is one of CSIT’s major responsibilities. Network Services is responsible for installing, managing and maintaining most of the University’s local and wide area network (LAN and WAN) connections.

The WAN currently consists of a high capacity microwave link between the Hawthorn and Prahran campuses of the University and ISDN (Integrated Digital Services Network) connections to Mooroolbark and from Mooroolbark to Glenfern Study Centre.

The network integrates over 2000 PCs, including Macs, between each of these sites to University resources such as host computing systems (AS/400, CRAY and many other UNIX hosts), library, file servers and electronic mail (e-mail).

The network also provides all campuses with access to the Australian Academic and Research Network (AARNet) and the worldwide INTERNET system, which offers extensive services.

The LANs are based on the IEEE 802.3 network standard and operate on fibre optic backbones and unshielded twisted pair cable to the workstation interface. Most hub and routers on the network are managed by UNIX workstations using SNMP (Simple Network Management Protocol).

Customer Liaison
Customer Liaison provides the all important interface between the computer service provider and the consumer with responsibility for the promotion of CSIT and the marketing and support of services provided by CSIT to the Swinburne community. This includes support for the interface between the Dynamic Library System and other administrative systems and responsibility for the library database as well as consulting to all sectors of the University which relate to the services provided by CSIT.

The Technical Publications Officer is responsible for the design and production of a comprehensive user guide and other supporting documentation. The Technical Publications Officer also produces information to improve the usability of CSIT facilities and services and produces a quarterly information technology newsletter, Access.
The HelpDesk provides a single point of contact to the user community at Swinburne and maintains a centralised call registration system which logs all problems associated with computer hardware and software, local and wide area networks, communications, e-mail, telephones and Voice Mail. Help Desk staff attempt to solve problems over the phone if possible, otherwise calls are assigned to the appropriate specialist group for resolution.

The HelpDesk is open between 8.30am and 5.00pm Monday to Friday and has two full-time staff. It is located in Room EN308.

Call the central HelpDesk number 214 5222 or e-mail to Helpdesk@buster.cc.swin.edu.au if assistance is required for services provided by CSIT.

**Voice Services**

Voice Services are responsible for all telecommunications and VoiceMail services at each of the Swinburne campuses, operate the switchboard and produce the internal telephone directory.

During 1994 all equipment and facilities at all three campuses were upgraded. Advanced features are available and will function between all campuses. The network is centrally operated allowing the switchboard operators to accept incoming calls from anywhere and redistribute them to any campus. Microwave links are used between Hawthorn and Prahran and Hawthorn and Mooroolbark.

As part of the upgrade, ISDN indials have replaced the PSTN indials to provide Swinburne University as a whole with a more integrated and streamlined numbering system. Depending on the growth of Swinburne in the next five to ten years we may see further numbers in use. These upgrades are designed to meet Swinburne's expanding telecommunications needs into the year 2000.

**English Language for Migrants**

Migrant Education Coordination
L. Cutting (Prahran), 214 6957
V. Reddaway (Hawthorn), 214 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 and Hawthorn campus.

**Part-time, evening courses**

Preparation for further study and work and personal development—Hawthorn campus only.

**January summer school**

English for academic purposes (full-time program) — Hawthorn campus.

**Language support within a mainstream course**

At both campuses, when circumstances allow, ESL students can have access to English as a second language (ESL) trained teachers and extra tuition time if they are enrolled in VCE, advanced certificate or 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, 2148151.

**Equity Unit**

Manager
M. Jones, CertEd(Wales), BEd(VicC), MEd(Mon)

Administrative Officer
J. Ng

Administrative Officer (Integration)
N. Crozier

Disability Project Officer
L. Adams

Affirmative Action Women in Non-traditional Areas Project Officer
J. Della

Project Officer (Special Projects)
L. Shave

Aboriginal Project Officer
S. Atkinson

Location
477 Burwood Road

Swinburne University of Technology is committed to providing a learning and working environment that is based on equality of opportunity for all.

Discrimination on the basis of gender, ethnicity, marital or family status, impairment, religious or political beliefs, or sexual preference will not be tolerated.

Student admission and assessment procedures, as well as staff recruitment and selection, will be conducted in accordance with the merit principle.

Swinburne is committed to providing an environment free from sexual harassment as well as pursuing a policy of Affirmative Action.

The Committee on Equity is chaired by the Vice-Chancellor and is responsible for developing policy and procedures that reflect Swinburne's commitment to equal opportunity.

For further advice or assistance please contact Mary Jones, Manager on 214 8855.
Swinburne Graduate Research School (SGRS)

Research Coordinator
J. Baird, BA(Hons), BLit(Melb), MBA(RMIT)

The mission of the Swinburne Graduate Research School is to promote and coordinate research and development activities by Swinburne staff and postgraduate students. It provides a University-wide perspective on research at the University. There are several key service areas for staff and postgraduates: the Graduate Research School, the Office of Research, PhD study, and scholarships and research funding opportunities.

The Graduate Research School

The School exists to provide a University-wide point of contact and communication for all postgraduate research students, to coordinate research services, and to ensure quality in research training.

The School runs regular seminars and workshops to assist staff and students to develop their research skills. It also offers induction programs for new researchers, postgraduates, offers advice on resources and provides a focus for interaction and development.

Office of Research

The Office provides advice on University policies for the conduct of research and the implementation of Swinburne’s Research Management Plan. It also publishes 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.

The Office administers research grants and contracts across the University, ethics committee approvals and intellectual property issues.

External organisations seeking advice on Swinburne’s research capabilities should contact the Office on 214 5223.

PhD study and Scholarships

The School is responsible for the administration of PhD degrees and coordination of students’ degree studies. 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. The School also 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 School 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 distributed widely around the University.

For further information on research at Swinburne, phone Jeanette Baird on 214 5211.

For further information about PhD study and scholarships, phone Margaret Tarr on 214 5223.

Hire of Swinburne Facilities

Swinburne lecture theatres and classrooms may be booked for use by outside organisations. Please contact the Information Office for further information on booking procedures — 214 8444.

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 Council Secretariat on 214 8485.

International Student Unit

Director
I. A. McCormick, BComm(Melb), MAdmin(Mon)

Deputy Manager
C. Chu, BA(Mon)

Overseas Student Advisors
T. Bourekas, BA(Mon), GradDipBIT(SUT)
Louise Dunn, BA(Hons)Melb, GradCertIntBus(RMIT)
B. Hammond, AssocDipTravel&Tourism(BHT)
S. Lock
G. Hennequin, BEd(Melb)
M. Lui, AssocDipOffSec(PIT)
M. Magaldi
D. Pun, DipMassComm(HKBC)
I. Tjahjono

Secretary
F. Benison, BA(FuJEN)

Location
473 Burwood Road, Hawthorn, 214 8151, 214 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 ongoing welfare of overseas students is also a responsibility of the unit.

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

**Director, Learning Services (Acting)**
R. Philp, ABCTechCert

**Administration**
G. Peters

**Learning Resources Production Unit**
Head
R. Philp, ABCTechCert
N. Alwis, City & Guilds, FullTechCert(Lond)
M. Clarke, Cert.Acct(WCOT)
G. Dudley, CertTech(AC)(RMIT)
K. Salehi, BA(CIT), DipPSP(RMIT)
G. Thomson
T. Young, BAppSci(Photo)(RMIT)

**Classroom and Technical Support Unit**
Head
R. Cameron, TechCert(RMIT), AssDipAppSci, MediaProd(VicColl)
J. Mansfield
N. Vargas
T. Weisz, CertTech(RMIT)
M. Young

**Technology Instructional and Curriculum Advisory Unit**
P. Jeffrey, BA(PNBG), Med(Mon)

**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 material for distribution on videotape, videodisc, in digitised form on multimedia computers or delivered via ISDN-type facilities;
- tutorial, documentary, drama and music material for distribution on cassette tape, compact disc, in digitised form on multimedia computers or delivered via ISDN-type facilities;
- computer based learning materials (e.g. tutorials and simulations to run on personal workstations or on larger machines accessible via the network), computer managed learning software (e.g. 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 trans-ferenc.es in printed form, or as Dart 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.

**Computer and Network Student Disciplinary Code**
A Student Disciplinary Code has been introduced to protect the integrity and maximise the academic utility to the Swinburne community of the university's electronic information systems. The Code is printed in full in the Procedures and Regulations Section of the Handbook on page 437.

**Library**

**Swinburne Librarian**
F. Hegarty, BA(UNewEng), DipLib(QIT), BEd(LaT), AALIA

**Deputy Librarian**
PC. Simmenauer, BA(Melb), DipLib(NSW), AALIA

**Collection Management**
C.L. Ellson, BSoCSci(Libship)(RMIT), GradDipAppSci(Town Planning)(RMIT), AALIA

**Staff Development**
B.J. Donkin, DipArts(SIT), GradDipEd(Hawthorn), AALIA

**Administration**
E. Turner, CertAppScLibSci(LibTech), CompBusApplCert

**Secretary**
A. Jenkin

**Systems and Research**

I.A. Douglas, BA(N'cle), MSc(Stirh)

**Technical Services**

D. Doherty, BA(Qld), AALIA
K. Apiluley, BEd(Institute & EdSci, Jakarta), GradDiplompAdmin(GradSchlPAdmin, Jakarta), GradDipLib(RimaCAE)
J. Balharrie, BA(UrbanStud)(FIT), GradDipLib(BCAE)
M. Delahoy, CertReg(RMIT)
A. Jankowska-Janiak, MLib&Sclnfo(U.B.Bierut, Poland), GradDipInfoServ(RMIT)
J. Saul, BA(Libship)(BCAE)
Hawthorn Campus

Campus Librarian
B.J. Nichol, BSocSc(Lib'ship)(RMIT), BA(Melb), AALIA

Audiovisual
A. Davies, BA(Melb), GradDipLib(MCAE), AALIA
M. Hawkins, BBus(Info&LibMgt)(RMIT)

Circulation
E.A. Carter, BSocSc(Lib’ship)(RMIT)

Periodicals
K. McGrath, BA(Mon), GradDipLib’ship(RMIT), AALIA
C. Barnes, BA(UNE)

Reference
J.M. Ager, BA(Melb), GradDipLib’ship(CCAE), AALIA

Liaison Librarians
Division of Business, Humanities and Social Science
B.M. Jones, BSocSc(Lib’ship)(RMIT), GradDipAppPsych(SUT)
H. Hazard, BA(Syd), DiplLib(Mon)

Division of Science, Engineering and Design
B. A. Camfield, BA(SIT), AssocDipLib’ship(RMIT)
F.M. O’Donnell, BA(Lib’ship)(BCAE)

Division of TAFE
R. M. C. Wallis, BA(Mon), GradDipLib’ship(RMIT), AALIA

Reference Librarians
A. Copeland, BSocSc(Lib’ship)(RMIT)
M. Rose, BSocSc(Lib’ship)(RMIT)
P. M. Taylor, BA(Mon), DipLib(NSW), TPTC, AALIA

Inter-library Loans
L. A. Duncan, BSoc(Lib’ship), GradDipInfoServ(RMIT)

Mooroolbark Campus

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

Liaison Librarian
A. Muir, BEd(Lib’ship)(Mon), TC, DipT(W’gong)

Prahran Campus

Campus Librarian
R. Humphries, BA(Hons)(Birm), GradDipLib’ship(RMIT)

Administration
L. Pengelly, AssocDipAppSocSci(LibTech)
R. Clements
J. Arcilla

Circulation
Vacant

Information Services
M. Fox, BEd(LaT), AALIA

Liaison Librarians
E. Dunstan, BA(Melb), DipEd(Melb), GradDipLib’ship(MCAE)
M. Thomey, BA(Mon), DipEd(Mon), GradDipLib’ship(RMIT)
G. Tumbull, BEd(LaT), GradDipLib’ship(RMIT), GradDipTeach(BrisCAE), AssDipFineArts, CertCommII(QCA), AALIA

Inter-library Loans
J. Pearson, CertAppSocSci(LibTech)

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. Most may be borrowed. Access to all collections is facilitated by an 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 collections of 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: 2148330
Monday-Thursday: 8.15am-10pm
Friday: 8.15am-9.30pm
Most Saturdays, some Sundays, Labour Day, ANZAC Day, Queen’s Birthday, Show Day, Melbourne Cup Day.

Mooroolbark Campus
Tel: 728 7115
Monday-Friday: 8.15am-5pm
Some Sundays, Queen’s Birthday, Melbourne Cup Day.

Prahran Campus
Tel: 214 6998
Monday-Thursday: 8.30am-8.30pm
Friday: 8.30am-5pm
Queen’s Birthday, Melbourne Cup Day.

Check library guides and noticeboards 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 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.

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.

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. If the item cannot be found after a reasonable search the borrower is responsible for the replacement cost plus an administrative charge. Borrowers are responsible for the cost of repair or replacement of damaged items.

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 the libraries.

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 telecommunications from home or other locations.

Swinburne University of Technology is committed to conversion of courses to multi-modal delivery and its provision is continuing to be implemented in 1995.

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 a 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 gaining.

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. Nevertheless, the Centre continues to offer a free service to enrolled students. 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) 214 8633, fax (03) 214 8643.

Parking

Enquiries, Facilities and Services Group
Hawthorn campus
2148760
Mooroolbark campus
7287111
Prahran campus
2146748

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 driver's observance of parking signs or directions given by any of Swinburne Parking or Security Officers.

Parking permits

Available from Facilities 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 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 840.00. 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 Facilities and Services, Hawthorn 214 8760 and Prahran 214 6748.

Motorcycles and bicycles
Campus motorcycle parking and bicycle rack locations can be obtained from Facilities 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 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, GradCertBusAdmin(SUT), PRIA, AIM, 214 8847
Handbook and course brochures
M. Trudgeon, BA(Melb), BA(FineArt)(PIT), 214 8548
Information office
214 8444
The role of the Publicity and Information Unit is to publicise, both internally and externally, the activities of Swinburne University of Technology. 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 coordination and organisation of exhibitions which includes Swinburne's annual Open Day.

Student and Educational Services
Manager
Z. Burgess, BA(Mon), MEd(LaT), GradDipEdPsych(Mon), MAPsS, AIM
Administrative Officer
E. Jolley
Coordinator, Projects
R. MacDonald, BA(Melb), DipEdPsych(Mon), MAPsS
Learning and Educational Development
Acting Coordinator
J. Hastings, BA(SiT), GradDipEdPsych(Mon), TPTC, MAPsS
Learning Skills Counsellor
Vacant
Counselling Services (Hawthorn)
Coordinator
F. Oberklaid, MA, MEd(BU), MAPsS, AIMG
International Student Counsellor
H. Kalaboukas, BA(Melb), BEd(Couns)(LaT), MAPsS
Counsellor
B. Jenkins, BEd(MCAE), GradDipPsych(Couns)(SIT)
Administrative Officer
M. Pelosi
Housing, Part-time Employment and Financial Advice (Hawthorn)
Coordinator
B. Graham, BAppSc(Pharm)(TCAE)
Administrative Assistant
M. Jolley
Careers Services (Hawthorn)
Coordinator
R. Ware, BA(LaT), DipEd(MSC), GradDipCareers(VicColl)
Careers Advisor
Vacant
Schools Liaison Officer
L. E. Baron, BA(RMIT), DipEd(LaT)
Careers Information Officer
K. Bevis
Employment Program Officer
S. Davis
Swinburne Health Service (Hawthorn)
Coordinator/Registered Nurse
J. Fischer, RN, RM(Vic)(UK), RN(USA)
Medical Officers
S. Clarke, MB, BS(Lond)
Y. Kronouer, MD(Uraguay)
Registered Nurse
A. Hart, RN(Vic)
Administrative Officer
J. Wright
Mooroolbark campus
Coordinator
E. Wallis, BA(RM)(Hons), MEd, GradDipEdCouns
Administrative Officer/Housing Part-time
Employment and Finance
Kerryn Morey, BA
Prahran campus
Coordinator
D. Balgovind, BA(Hons)(Qld), DipEd(Melb), MAPsS, AIMG
Student Counsellor
M. Galante, BA(Mon), BSoWork(Mon), AASW
Nurse
W. Avery, RN, RPN(Vic), GradDipCommHealth(Deakin)
Medical Officers
M. Sargeant, MBBS
D. Yiap, MBBS, FRACGP, DipRACOG
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;
- careers/employment information and resources;
- vocational assessment.

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

**Counselling Services**

The Counselling Service is available to current students and their families, staff and students who graduated twelve months ago. Most services are free and confidential. The services offered to the University community include individual counselling which operates on both a fixed appointment and drop-in basis, group programs, consultancy, professional supervision and continuing education programs.

The Counsellors, who are registered psychologists, help in areas such as adjustment to life at Swinburne, loneliness, personal problems, academic difficulties and procedures, relationship difficulties, family concerns and sexuality issues. A specialist international student counsellor is also on staff to assist international and NESB students at the University.

The Counselling Service endeavours to develop and support procedures which will improve the general welfare of students and enhance their education at Swinburne.

The opening hours of the Service are:
- Monday, Tuesday and Friday
  9.00am-5.00pm
- Wednesday and Thursday
  9.00am-6.00pm

Services for students:
- personal development
- interpersonal skills development programs
- individual counselling for Australian and overseas students
- professional supervision and training

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

**Housing, Part-time Employment and Finance**

The Housing Service provides information and independent advice on all aspects of housing including tenant rights. Listings of Hostels, private board, shared and self-contained rental accommodation are also available. Notices for part-time employment are advertised for students as well as information on all aspects of employee rights and responsibilities.

The service also provides a tutor register for students requiring tutoring or who are interested in becoming tutors.

Financial Advice and Student Loans
(See Student Assistance Schemes).

**Health**

This is a confidential nursing and medical service covering:
- emergencies
- clinical care
- health promotion

It is available to all Swinburne students and staff. We offer:
- immunisation/general, overseas
- hearing/vision testing
- asthma management
- full clinical assessment
- health counselling
  - nutrition
  - contraception
- sexually transmitted diseases
- information programs

**Contact details**

The majority of services listed below at the Hawthorn campus are also available at the Mooroolbark campus and the Prahran campus. 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: 214 862212

**Career Planning and Industry Liaison (Hawthorn)**
465 Burwood Road, Hawthorn
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 214 8521

**Counselling (Hawthorn)**
Room BA206, Ground Floor, Business and Arts Building
Hours: 9.00am-5.00pm (Monday-Friday)
Hours: 9.00am-6.00pm (Wednesday and Thursday)
Phone: 214 8025

**Housing, Employment and Finance**
465 Burwood Road, Hawthorn, 2nd level, access via laneway behind library
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 214 8882

**Health (Hawthorn)**
Contact details: Student Health Service — laneway behind library
Hours: 8.45am-5.00pm (Monday-Friday)
Phone: 214 848312

**Mooroolbark campus**
Administrative Building (A) Room MA4
Hours: 9.00am-5.00pm (Monday-Friday)
Phone: 728 7105/728 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: 214 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 Housing, Part-time Employment and Finance Office.
- 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.
- Supply all the documentation requested, otherwise delays will occur.
- Get your application in early — it always takes AUSTUDY some weeks to process your application.
- If applying for first semester get your application in by March 31 1995, if you want to receive backpay to the first of January.
- Don't accept a decision from AUSTUDY if you think it is inaccurate or unfair. Ask your Financial Adviser on campus for assistance.

**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 the campus Finance Adviser 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. Application forms are available at Student Health or Housing, Part-time Employment and Finance Office on campus.

**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.
For more information regarding student loans and other financial advice contact the Finance Adviser on campus.

**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. Concessions are 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 students 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 students within the framework of effectiveness, convenience and need.

The Union in representing the students operates within the realms of the policy initiator, 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 development and decisions implemented are mindful of current and future students. Incorporation has breathed life in perpetuity into this organisation, which has become increasingly effective by the year in servicing the students.

**Organisational aims**

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 coordinate 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.

**Management**

At the time of writing, the representative structure of the student body is undergoing a thorough review with the expectation that it will reflect more the decision making flow of the University.

The Union is currently managed by an executive comprised of the President, Vice President, Finance Director, Education Director, Activities Director and Media Director.

The role of the executive is to 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 students.

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 is to develop policies of the Union in the areas of their activity. The management committees consist of: the relevant executive as chairperson, two to three students from the Union executive, two to four students 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 year’s 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 students 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 it provides.

**Union office/Reception**

This is situated on the fourth level of the Union Building. Various services are provided here including room bookings, Legal Adviser bookings, insurance claims, facsimile and general information. Union personnel located in the Union Office include the President, Administrative Officer, Manager and Accountant.

Telephone numbers: 214 2156, 214 2656, 214 2966, 214 8520, 214 8553.

**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 that it relates to activity associated with Swinburne. For further details, please contact the Accountant in the Union Office.

**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.

**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 214 8520.

**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.
Contact/Activities Department

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 programs 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 the risk of harm to the majority of women students who utilise this service.

Orientation week

Orientation occurs during the first week of academic classes. During orientation a diversity of entertainments 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.

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 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 photocopyers. 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 214 8291. As the library is a non-profit operation, its hire rates are very reasonable (1/3 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, barbecues, PA system, tents and rucksacks.

Radio station

3SSR — Swinburne Student Radio.
Location: fourth level of the Union Building.
The Radio Station is run by a committee which consists of:
- Program 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.

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.

Catering Department

The Greenhouse Coffee Lounge
Situated on the third level of the Union Building, this is a comfortable and popular lounge specialising in cappuccinos, hot chocolates and herbal teas. The Greenhouse serves quality cakes and pastries and lunchtime 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: 214 8530.

The Ethel Caf
The largest cafeteria on campus, the Ethel is located on the third level 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: 214 8172.214 8174.214 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 Cafe 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: 214 9380.

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 education of welfare, is on the fourth floor of the Union Building. There are three sections within this department:

Student Appeals and Counselling
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, division 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 Counselling Officer will also prepare consultation on any facet of student education or welfare, is available on the fourth floor of the Union Building. Phone: 214 9380. Fax: 819 2256.

Other services offered in the Computer Centre include:
- Faxing
- Photocopying
- Word processing
- Laser printing
- Binding service

Campus Computers also offers access to a range of operating systems including MS-DOS, Wordperfect 5, spreadsheets and others are available.

Other services offered in the Computer Centre include:
- Resume typing
- Laser printing
- Binding service

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

Binding service
A thermal glue binding service that provides excellent presentations 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 rates per page.

For further information contact Campus Computers, 4th level, Student Union Building or telephone 214 9266 or 214 8553.

Mooroolbark campus
Coordinator, Mooroolbark campus
A. McGill, DipT, BEd(VcColi), 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. It provides a forum for students to present and discuss their views on relevant matters.

The Student Union also publishes 'Tabular Rasa' once or twice a semester. 'Tabular Rasa' 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. Students are welcome to contribute graphics, cartoons and articles. 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.

Communications and Information Systems Department
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 'Tabular Rasa' once or twice a semester. 'Tabular Rasa' 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. Students are welcome to contribute graphics, cartoons and articles. 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.

Research Unit
This unit 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.

For a free diary and year planner which are available from the Contact Desk and at re-enrolment.

Campus Computers — Student Union
Computer Centre

Campus Computers offers access to a range 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
- Laser printing

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

For further information contact Campus Computers, 4th level, Student Union Building or telephone 214 9266 or 214 8553.

Mooroolbark campus
Coordinator, Mooroolbark campus
A. McGill, DipT, BEd(VcColi), 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. It provides 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 in the Union Building adjacent to the Contact Centre. Here, students and staff are tempted with the aroma of homemade treats such as soup, hot takeaway 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 people. The cafe is open 8.00am - 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 a pleasant alternative to the other areas on the Prahran campus. Daily papers are available so students can keep up with life outside the campus.

There are regular activities for students to participate in, either by turning up on the day, or more actively by helping with organisation. 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 contribute.

For more information visit the Contact Desk at the top of the stairs off High Street, level 2 Building U, or phone 214 6724 or 214 6729.

**Sports Association**

**Executive Officer**
A. Tingate, BAppSci(FIT)

**Recreation Coordinator**
D. Shanahan, BAppSci(FIT)

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

**Clubs Development Coordinator**
Vacant

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

**Campus Resource Officers**
R. Chambers, BBus(Swin)
T. Jilbert, AssDipSportAdmin(Griff)
T. Rehak, BA(Lat), DipEd(Melb)

**Receptionist**
P. Kennedy
V. Carlin

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, circotron 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 1994 the number of clubs continued to grow, especially at Mooroolbark and Prahran where the club system began in 1993. 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 Mooroolbark campus in the new Sports Centre planned for completion in late 1994. 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.

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: 214 8018

Mooroolbark
Monday-Friday 9.00am-5.00pm
Room MC3
Phone: 728 71 71

Prahran
Monday-Friday 9.00am-5.00pm
Room G107
Phone: 214 6745
Swinburne
Higher Education Sector

Higher Education Sector Centres
Applied Colloid and BioColloid Science Centre
Applied Neurosciences Centre
Biomedical Instrumentation Centre
Computer Integrated Manufacture Centre
Computing Productivity Institute Centre
Design Centre
Energy Systems Engineering Centre
Housing and Planning Centre
Industrial Democracy Centre
Laboratory for Concurrent Computing Systems
Marketing Strategy Centre
Media and Telecommunications Centre
National Centre for New Media Arts and Technologies
National Korean Studies Centre
Psychological Services Centre
Science Education Centre (Swinburne Travelling Science Show)
Taxation Research and Advisory Centre
Urban and Social Research Centre
Women's Studies Centre

Divisions
Division of Business, Humanities and Social Science
Division of Science, Engineering and Design

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Exemptions
Composition of Academic Board

The Board's composition is currently under review. The schedule below shows the composition as at October 1994.

**Members ex-officio**

Chancellor
Vice-Chancellor
Pro Vice-Chancellor, Business Humanities and Social Science
Pro Vice-Chancellor, Science, Engineering and Design
Pro Vice-Chancellor, Research
Pro Vice-Chancellor, Information Services
Chair, Board of Technical Studies
Manager, Mooroolbark Campus
President, Student Union

**Elected Members**

Four professors/associate professors from within the University with not more than two from each teaching division; at least two must be full professors.

Two heads of school from each teaching division.

Twelve members of academic staff with at least eight not being of the rank of professor, associate professor and head of school.

One member of academic staff located permanently at the Prahran campus

Two members of the general staff of the University, the general staff within the TAFE Division being excluded.

One postgraduate student.

Three higher education students, one at each of Hawthorn, Prahran and Mooroolbark campuses.

**Total membership 36**

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 (i.e., 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. The degrees and specialist areas in which Swinburne students may graduate are:

**Bachelor of Applied Science BAppSc**

- Applied Chemistry
- Applied and Industrial Mathematics
- Biochemistry/Chemistry
- Computer Science (conversion course)
- Computer Science and Psychology
- Computer Science and Software Engineering
- Computing and Instrumentation
- Environmental Health
- Management Science and Computing
- Mathematics and Computer Science
- Medical Biophysics and Instrumentation
- Psychology and Psychophysiology

**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 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)
Graphic Design
Industrial Design

Bachelor of Engineering BEng*
Civil
Communication and Electronic
Computer Systems
Electrical Power and Control
Manufacturing
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
Studies may be undertaken in various areas offered by certain schools in the Division of Science, Engineering and Design.
*In certain circumstances this degree may be combined with the Graduate Diploma in Management.

Postgraduate

Graduate Certificates
Business Administration
Business Information Technology
Computer Science
Enterprise Management
Health Statistics
Social Statistics
Taxation and Finance
Training Management
GradCertBusAdmin
GradCertBusInfTech
GradCertAppSc
GradCertEntMgt
GradCertAppSc
GradCertTax&Fin
GradCertTfgMgt
GradDipBusInfTech
GradDipCAD/CAM
GradDipChemEng
GradDipConstr
GradDipCIM
GradDipAppSc
GradDipCompSysEng
GradDipConstrMgt
GradDipCorpFin
GradDipEOAdmin
GradDipAppSc
GradDipJapanese
GradDipJapanese(Prof)
GradDipKorean
GradDipKorean(Prof)
GradDipMgt
GradDipMgSys
GradDipManTech
GradDipMKTMod
GradDipOrgBeh
GradDipPhil&CultInq
GradDipRiskMgt
GradDipAppSc
GradDipUrbanResPol
GradDipWriting
GradDipAppSc
GradDipAppSc
GradDipJapanese
GradDipJapanese(Prof)
GradDipKorean
GradDipKorean(Prof)
GradDipMgt
GradDipMgSys
GradDipManTech
GradDipMKTMod
GradDipOrgBeh
GradDipPhil&CultInq
GradDipRiskMgt
GradDipAppSc
GradDipUrbanResPol
GradDipWriting

Graduate Diplomas
Air-conditioning
Animation/Interactive Multimedia
Applied Colloid Science
Applied Philosophy
Applied Psychology
Asian Studies
Business
GradDipAircond
GradDipAniminteract
GradDipAppSc
GradDipAppPhil
GradDipAppPsych
GradDipAsStuds
GradDipAppSc
GradDipBusAdmin
GradDipBusInfTech
GradDipChemEng
GradDipConstr
GradDipCIM
GradDipAppSc
GradDipCompSysEng
GradDipConstrMgt
GradDipCorpFin
GradDipEOAdmin
GradDipAppSc
GradDipJapanese
GradDipJapanese(Prof)
GradDipKorean
GradDipKorean(Prof)
GradDipMgt
GradDipMgSys
GradDipManTech
GradDipMKTMod
GradDipOrgBeh
GradDipPhil&CultInq
GradDipRiskMgt
GradDipAppSc
GradDipUrbanResPol
GradDipWriting

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 MComms
Master of Engineering MEng
Computer Integrated Manufacture
Master of Enterprise Innovation MEntInnov
Master of Information Technology MInfTech
Master of International Business MIntBus
Master of Philosophy and Cultural Inquiry MPhil&CultInq
Master of Technology MTech
Computer Integrated Manufacture
Construction Management
GradDipAircond
GradDipAniminteract
GradDipAppSc
GradDipAppPhil
GradDipAppPsych
GradDipAsStuds
GradDipAppSc
GradDipBusAdmin
GradDipBusInfTech
GradDipChemEng
GradDipConstr
GradDipCIM
GradDipAppSc
GradDipCompSysEng
GradDipConstrMgt
GradDipCorpFin
GradDipEOAdmin
GradDipAppSc
GradDipJapanese
GradDipJapanese(Prof)
GradDipKorean
GradDipKorean(Prof)
GradDipMgt
GradDipMgSys
GradDipManTech
GradDipMKTMod
GradDipOrgBeh
GradDipPhil&CultInq
GradDipRiskMgt
GradDipAppSc
GradDipUrbanResPol
GradDipWriting
GradDipAircond
GradDipAniminteract
GradDipAppSc
GradDipAppPhil
GradDipAppPsych
GradDipAsStuds
GradDipAppSc
GradDipBusAdmin
Masters by thesis can be undertaken in both Divisions. Enquiries should be made to the divisional manager of the Division concerned.

Degree of PhD

By thesis
Enquiries should be made to the Swinburne Graduate Research School on 214 8238.

Professional Doctorate

By coursework and research
Organisation Dynamics
Enquiries to School of Management in the Division of Business, Humanities and Social Science.
Psychology
Enquiries to School of Social and Behavioural Sciences in the Division of Business, Humanities and Social Science.

Entrance requirements
Undergraduate

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 Mooroolbark campus, 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 division conducting the course and listed in the Swinburne Handbook.

3. Each division 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

Applications 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 qualification, 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 divisional sections.

Application procedure

Undergraduate

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 1994.
- 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.

Alternative Category Entry (for applicants without VCE or equivalent)

Applications for all courses, must be made to VTAC. Applicants for some courses may be required to attend an interview or sit an aptitude test.

Second year and higher
Applications for Humanities, Business and Applied Science should be made to VTAC, 40 Park Street, South Melbourne, 3205.

Applications for Graphic Design and Engineering should be made direct to Swinburne. Forms can be obtained from the Admissions Officer, 214-8386.

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

- Graphic Design
  - 16 September 1994
- Engineering
  - 13 January 1995

Part-time
Applications for admission to part-time courses in Humanities and Business must be made through VTAC. All applications for part-time courses in Engineering must be made direct to Swinburne. Forms are obtained from the Admissions Officer, 214 8386.

Closing dates for part-time places are:

- Humanities
  - 16 September 1994
- Business
  - 16 September 1994
- Engineering
  - 13 January 1995

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

Part-time courses are not offered in Applied Science or the Swinburne 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, 214 8386.

Applications for admission to postgraduate courses should be received by:
### Applied Science (By Coursework)
- Grad Dip Computer Science: 18 November 1994
- Grad Cert & Grad Dip Social Statistics: 9 December 1994
- Grad Cert & Grad Dip Health Statistics: 9 December 1994
- Graduate Diplomas:
  - Applied Colloid Science: 13 January 1995
  - Biomedical Instrumentation: 13 January 1995
  - Industrial Chemistry: 13 January 1995
- Masters:
  - Applied Colloid Science: 13 January 1995
  - Biomedical Instrumentation: 13 January 1995
  - Social Statistics: 13 January 1995
- Humanities:
  - Professional Doctorate Psychology: 21 November 1994
  - Masters & Grad Dip Applied Philosophy: 21 November 1994
  - Masters & Grad Dip Asian Studies: 21 November 1994
  - Masters & Grad Dip Philosophy and Cultural Enquiry: 21 November 1994
  - Grad Dip Applied Psychology: 21 November 1994
  - Grad Dip Equal Opportunity Administration: 16 January 1995
  - Masters Communication: 16 January 1995
  - Masters & Grad Dip Japanese and Japanese for Professionals: 16 January 1995
  - Masters & Grad Dip Korean and Korean for Professionals: 16 January 1995
  - Masters & Grad Dip Urban Research and Policy: 16 January 1995
  - Grad Dip Writing: 16 January 1995
- Business:
  - All Graduate Diploma Programs: 16 December 1994
  - All Graduate Certificates: 20 January 1995
  - Master Business Administration (MBA): 20 January 1995
  - Master International Business: 20 January 1995
- Engineering:
  - All Courses: 13 November 1994

### Higher Degrees by research
All applications for enrolments in courses leading to the degree of Master by research or by publication should be directed to the Divisional Manager of the appropriate division. Doctor of Philosophy applications should be addressed to the Swinburne Graduate Research School.

Copies of the Statutes for the degree of Master by research and by publication and PhD are set out on pages 439-445.

### 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 214 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, 48 Edinburgh Road, Mooroolbark (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.

#### Prahran campus
**Enquiries 214 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 1995 may apply for a deferment until 1996. Applications must be addressed to the Academic 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 division 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 Sector have to make a contribution to the cost of their studies. In 1994 the annual charge was $2,355 for a full-time student (or $1,177 for each full-time semester).

Part-time students pay a contribution in proportion to their full-time load.
HECS Payment Options

Students have the option of:
(i) Paying the contribution on a 'Pay Now' basis (i.e., in a lump sum payment attracting a 25% discount), or,
(ii) Paying the contribution on a 'Pay Now' basis and authorising the 'Safety Net for Pay Now' option (Swinburne will automatically convert the student status to the 'Pay Later' Option should the lump sum payment not be received by Census date), or,
(iii) Paying the contribution on a 'Pay Later' basis through the taxation system, or,
(iv) Making one partial payment 'Pay Now' (minimum $100) 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.

Tax File Numbers

All students selecting the 'Pay Now' or the 'Safety Net for Pay Later' option must provide their Tax File Number to the University at the time of their enrolment. Students who do not have a Tax File Number must apply to the Australian Tax Office before enrolment and submit their Tax File Number to the University before the census date. Failure to provide the University with a Tax File Number will result in cancellation of enrolment.

Change of HECS Payment Option

Students have an opportunity of changing their option by completing a new Payment Options form before the census date for each Semester. If a new form, notifying a change of option, is not received by the HECS Officer, the student's HECS status remains unchanged and carries over into the following year.

Census dates:
First semester 1995          31 March 1995
Second semester 1995         31 August 1995

HECS Exempt categories

Students exempt from the Scheme include:
* those who have paid fees to the University 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.

HECS refunds

HECS refunds will be made to 'Pay Now' 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 course code in the subject register maintained by the Student Administration section of the Academic Registrar's Department; the singular includes the plural.

Awarding school means the school or, where courses are organised on a divisional basis (the Division of Business, Humanities and Social Science, the Division of Science, Engineering and Design) the division responsible for the particular course; ‘head of awarding division’ has a similar meaning and includes the Pro Vice-Chancellor of the division where appropriate and the nominee of the head of the awarding department or Pro Vice-Chancellor.

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

Leaves of absence means the suspension of enrolment during a course for a specified period at the discretion of the appropriate divisional 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 and complete;
- the approval of the head of the awarding school (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 Academic Registrar the authority to provide to 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 any 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.
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 1995 will be at the rate per weekly contact hour as set by the division, plus the appropriate general service fee. The offering of places in single subjects is at the discretion of the division concerned and can be done only after full credit students have been accommodated. Therefore offers may be as late as the first week of teaching.

An application form is available from the division concerned or the Admissions Officer. Some fee exemptions and concessions exist.

The fees for 1995 are:

**Full-time students (F/Y)**
- $186.00

**Part-time students (F/Y)**
- $91.00

**Students studying in the cooperative mode (F/Y)**
- $31.00

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.

A 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 Divisional Office prior to 31 March 1995.

**No later VTAC offer**
A student who withdraws and does not receive a higher preference offer from WAC may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal is lodged at the Divisional Office prior to 31 March 1995 for semester one and 31 August 1995 for semester two.

No refunds of fees will be made where a student withdraws from study after 31 March 1995 for semester one and 31 August 1995 for semester two. No refunds of fees will be made under any of the provisions set out above unless the student returns to the Divisional Office with the notice of withdrawal and his or her 1995 student identity card. A copy of the student's enrolment receipt must also be attached for any refund applications. No refunds can be processed without a copy of the receipt and ID card.

**Confirmation of University records**

The University recognises that errors can be made in the transcription of enrolment details from original copies of enrolment forms to the computer-held files. It also realises 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 Divisional Office of any errors existing in the records will be required to pay a substantial fee for each amendment to be made.

**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.

**Postgraduate fees refunds**

Students should contact course authorities for details.

**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 1995

(b) for subjects concluding at the end of the second semester
   - 31 August 1995.
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 Pro Vice-Chancellor of the division concerned, and the Academic 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 1995 for semester one, or for semester two, prior to 31 August 1995.

HECS liability

Students who withdraw from subjects or total enrolment after 31 March 1995 for subjects concluding at the end of the first semester or after 31 August 1995 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 1995 will still incur a HECS liability for semester 1. Students who withdraw from a full year subject after 31 August 1995 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 schools. Students should be aware that some divisions have restrictions on the period during which subjects can be added.

Notwithstanding any divisional rules, after 31 March 1995 (for subjects concluding at the end of the first semester) or 31 August 1995 (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 Pro Vice-Chancellor of the division concerned and the Academic Registrar has been given. A fee of $10.00 per subject will be charged. Students not enrolled in a subject during the examination period must seek approval of the division concerned. A fee of $50.00 per additional 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 Divisional Manager of the appropriate division. 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 division concerned under any specific division rules relating to leave of absence.

Students who have been granted leave of absence will be notified in writing by the division 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 1995 General Service Fee only if their application is received prior to 31 March 1995 for semester one or 31 August 1995 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 or the Divisional 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 Divisional 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 possible. 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 Divisional Office with the notice withdrawal from a course.
Academic statements

Statements
1. Students automatically receive record of their academic progress. Result Certificates are posted to each student at the end of each semester.
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
These statements are normally produced five working days after the request has been made.

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 school or divisional office.

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 20 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 both Divisions in the Higher Education Sector. 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 divisional brochures. In addition, a Credit Transfer Handbook for the whole University is available from the Information Office, Student Administration Office and within schools.

TAFE students who have completed an Associate Diploma and who 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 divisional/chapter.

Swinburne Centres

Centre for Applied Colloid and BioColloid Science

Head
Professor D.E. Mainwaring

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, coursework 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 prove advantageous to the quality of teaching at both undergraduate and postgraduate (particularly coursework 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

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
Associate Professor D. Murphy

School of Biophysical Sciences and Electrical Engineering, 214 8834

The Centre was established 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 of the School of Biophysical Sciences and Electrical Engineering.

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 214 8600 Fax: 81 9 4949

School of Mechanical and Manufacturing Engineering, 214 84591837

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
Prof Kindler

Division of Business, Humanities and Social Science, 214 8883

The mission of the Computing Productivity Institute is to:
- provide a database of information on available computing productivity methods and tools for use with the whole spectrum of computing systems
- provide a database 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

Swinburne School of Design 214 6909

The Design Centre provides equivalent industry based learning professional design practice for postgraduate students to qualify for a conversion to the award of Bachelor of Design 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
Associate Professor Yos Morsi
School of Mechanical and Manufacturing Engineering, 214 8458

Established in 1989, the Centre aims to provide a focus for research and teaching in every related matter for the power, mineral and chemical process industries.

In meeting its obligations, the centre is developing two major thrusts:

- development and application of numerical models such as manufacturing process models, finite element and finite difference models of thermo-fluid and material deformation processes and analytical models and
- development of 'leading edge' physical modelling diagnostic tools. In this area the centre is committed to the continuing development of its laser/Doppler velocimeter as a non-intrusive technique for two-phase flow measurement and flow born particle sizing.

Centre for Housing and Planning

Director
Professor L.A. Kilmartin, 214 8146

Enquiries: 214 8825, 214 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 cooperation and liaison around housing issues;
- to develop links with other higher education institutes;
- to develop a coordinated approach to the provision of housing information and teaching.

Centre for Industrial Democracy

Chair
J. Morison

School of International and Political Studies, 214 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, employee participation and cooperative management.

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. The Centre is also involved with ongoing contact with current cooperative developments in Spain and Italy.

Laboratory for Concurrent Computing Systems

(Hawthorn campus)

Contact
Associate Professor D. Grant

School of Computer Science and Engineering

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
- 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 developments and hence significantly improve competitiveness. It also provides appropriate training programs for industry.

**Centre for Marketing Strategy**

**Director**
Mr. L.A. Zimmerman

**School of Management, 214 8074**

The Centre provides a focal point between the business and government sectors and the management discipline at Swinburne University. Its focus is to assist Australian business and industry in the development of their domestic as well as international strategies.

The Centre offers a range of consultancy services including:
- Scenario analysis
- Industry demand analysis
- Export opportunities
- Marketing research
- Strategic research
- Building and execution of customer focus workshops
- Design and delivery of quality services

The Swinburne Centre for Marketing Strategy recognises the critical importance of satisfying the expectation of all customers, both internal and external, at all times.

During 199411995 the Centre is conducting a series of short programs on world class service design and execution.

**Media and Telecommunications Centre**

The Media and Telecommunications Centre, established in 1988, is based in the media studies subject area in the Division of Business, Humanities and Social Science. 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 Centre for New Media Arts & Technologies (NCNMAT)**

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.

**National Korean Studies Centre**

**Executive Director**
Adrian Buzo, 214 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 Korea in Australia.
Centre for Psychological Services

Manager
R.H. Cook
School of Social and Behavioural Sciences,
214 8105 or 214 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 School of Social and Behavioural Sciences, and enhances the teaching resources of the School 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
(The Swinburne Travelling Science Show)

Chair
Professor J.G. McLean, Pro Vice-Chancellor

Coordinator
Peter Lees, 214 8503

The Swinburne Travelling Science Show operates as part of the Division of Science, Engineering and Design to promote interest in the sciences, engineering and technology. The activities of The Swinburne Travelling Science Show include:
- school based programs for primary and secondary schools which are designed to stimulate an interest in science and engineering
- a community based program for promotion of Swinburne University and the Show’s sponsors to the wider community
- support for the Show to teachers in the form of seminars; in-service training and technical information

Taxation Research and Advisory Centre

Director
Denis Vinen
Division of Business, Humanities and Social Science, 214 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
- 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.
Centre for Urban and Social Research

Chair
J. Pidgeon
School of Information Systems, 214 8306, 214 8825, Fax 819 5349

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 complimented 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 multi-media 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 as well as making regular appearances in the print and electronic media.

Centre for Women's Studies

Chair
T. Castleman
Division of Business, Humanities and Social Science, 214 8466

The Centre for Women's Studies is composed of members 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.

Community relationships

Members of the Centre are involved in numerous external committees and panels as well as making regular appearances in the print and electronic media.
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Division of Business, Humanities and Social Science

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Divisional Manager, Student and Course Administration
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School of Commerce

Accounting

Head
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Principal Lecturers
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W.H. Platt, BCom, DipEd(Melb), MAdmin, MEnvSc(Mon), CPA

Senior Lecturers
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M. Dunkley, BCom(Melb), MBA(Mon), CPA
J.R. Gerrand, BCom(Melb), CPA
L. Koot, BCom(Melb), MSc(Melb), CPA
A. Richardson, BEc(Mon), GradDipEd(TSt), MBA(Melb), ACA
B.W. Spurrell, BCom, BBus, MBA(Melb), CPA, FCPA
D.G. Vinen, BCom, MEd, MSc(Melb), ACA, FTIA
D.J. Wells, BCom(Hons)(Qld), MAdmin(Mon), CPA, FCPA

Lecturers
M. Barut, BBus, GradDipAcc(SIT), MBA(Mon), MACS
A. Bell, BBus(Stir), GradDipBus(SIT), ASA
C. Marsh, DipBus(Stir), MScBus(Stir), ACA
E. Sandercock, BA(Wa), BBus(Stir), CPA, ACA
I. Tempone, BCom, DipEd(Melb), CPA
K. Turpie, BEc(Hons)(Stir), MCom(Melb), CPA

Economics

Head
D.J. Thomas, MA(Syd), PhD(Mon)

Principal Lecturer
J.B. Wielgosz, BCom(Hons), MA, DipEd(Melb)

Senior Lecturers
P.G.L. Harkness, BAgEc(UNE), MAdmin(Mon)
S. Holligan, BEc(Hons)(Stir)
D.J. Owens, BEc(Hons), MAdmin(Mon)
R.N. Smith, BA(Hons), DipEd, DipContEd(UNE), MCom(NSW), GradDipBIT(SIT)

Lecturers
C. Barry, MEd(Melb)
M. Freebairn, BAgEc, DipEd(UNE)
J. Gerstman, BA, BEd(Mon)

Law

Head
P. Holland, DipEd, BCom, LLB(Hons)(Melb), MEnvSc(Mon), Barrister & Solicitor (Vic) Supreme Court

Principal Lecturer
B.R. Clarke, BEc, Ecom, GradDipMktg(CIT), Barrister and Solicitor (Vic) Supreme Court

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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

School of Information Systems

Information Systems

Head
J.A. James, DipMedRadiotherapy, GradDipDP(RMIT), MBIT (RMIT)

Associate Professor
M.G. Nicholls, MSc, PhD(Mon), MACS

Principal Lecturers
G.M. Leonard, BSc(Melb), MACS
G.A. Murphy, BCom(Melb), CPA
J.F. Pidgeon, BA, DipEd(Mon)
W.D. Wilde, BCom(Birm), MSc(Melb), MACS

Senior Lecturers
N.L. Bailey, BSc(Leeds), GradDipEd(HIE), MACS
P.M. Kindler, DipBus, BAppSc(CIT), CPA, MACS
S.R. Sicilia, BSc(Hons), PhD(Mon), MIF, MAIP, MACS
P.M. Simmons, BSc(Hons)(Sheff), MACS
J.A. Sykes, BE(Hons)(Melb), DipEE(CIT), PhD(UNS W)

**Lecturers**

O.K. Burmeister, BAppSc(SIT), DipMin
B.A. Calway, GradDipMgtSyst(SIT), MBus(IT)(SIT), MACS
P.J. Ender, BSc(Hons)(Qld), MSc(Mon), GradDipComp(Melb), GradDipEd(Anl), MACM
I.B. Fantin, DipBS(EDP)(FIT), DipEdAIE, BEd(Lat)
E. Levin, BA, DipEd(Melb)
E. Lindberg, BAppSc(CIT), GradDipEd(HIAE), MACS
K.M. Marles, BSc(Griffith)
J.L. Munro, BEd(Mon), GradDipBusAdmin(SIT), MIT (SIT), MACS
J.M. Pitt, BA(Melb)
G. Ravalli, BSc(Hons)(Melb), DipEd(Melb), GradDipMathSc(Melb)
L. Schulberg, BEd(CIT), GradDipEd(Mon)
P.A. Sala, BBus (SIT)
M.S. Thirairasa, BA(SIU), MACS
M.C. Too, BA(Mu), MSSM(USC), MPA(USC), GradDipSAD(Edin), MACS

**School of International and Political Studies**

**Head**

D. Mayer, LLB(Melb), MA(Mon), GradDipEd(Haw)

**Asian Languages and Cultures**

**Chair**

A. Skourides, PhD(Mon)

**Senior Lecturers**

N. Fukushima, DipEd(Tokyo), MA(Mon)
T. Machida, BA(University of Sacred Heart, Japan), MEd(LaT)

**Lecturers**

J. Chen, BA(Akita Keizai Daigaku), GradDipJapanese(SIT)
T. Kikuchi, MA(AnU)
S. Kim, BA(Sangmyung), BA(Mon), DipEd(Mon)
T. Mizuno, BA(Tokai), GradDipAppLing(Mon)
T. Nawano, BEd(Kyoto University of Education)
T. Savage, BA(Purdue), DipEd(Purdue), BEd(Hons)(Melb), GradDipJapanese(SIT)
W. Seo, MA(Cincinatti), PhD(Cincinatti)
Q. Ton-That, BSc(University of Tasmania), GradDip(Leg.Stud.) (LaTrobe)
R. Warmington, BA(Hons)(Mon), DipEd(Mon), GradDipJapanese(SIT)

**Italian Language and Culture**

**Chair**

L.A. Hougaz, MA(Melb), DipEd(Melb)

**Senior Lecturers**

D. Fairservice, MA(WA), PhD(Edin), DipEd(MCAE)

**Lecturers**

M.M. Masini, BA(Hons)(Melb), DipEd(LaT)

**Political Studies**

**Chair**

D.Y. Mayer, LLB(Melb), GradDipEd(Haw), MA(Mon)

**Senior Lecturers**

S. Lakha, BSc(Hons)(Hull), GradDipUrbStuds(London), PhD(Mon)
P.J. Love, MA(LaT), PhD(ANU)
K.J. Rowley, BA(Hons)(Melb)
F.X. Walsh, BA(Melb), BEd(Mon)

**Lecturers**

G.C.J. Moneson, BA(Mon), DipSocStud(Melb), GradDipEd(Haw)
J. Schmid, MA(Melb)
J. Tighe, MA(LaT)

**School of Management**

**Marketing and Organisation Behaviour**

**Head**

B. Cargill, BA(Melb), MAPS

**Associate Professors**

C. Christodoulou, BAppSc(Melb), MSc, MAdmin, PhD(Mon)
S. Long, BA(Hons)(Melb), TSTC, MEd(Mon), PhD(Melb)

**Principal Lecturers**

J. Newton, MA(Leeds), BBus(CIT)
G. Watts, BCom, MBA, DipEd(Melb), GradDipAppSocPsych(SIT)
L.A. Zimmernman, BCom, MBA(Melb)

**Senior Lecturers**

G. Drummond, MA(Melb)
B. Evans, BAppSc(RMIT), MAdmin(Mon), GradIMA
M. Enright, DipBusStuds(CIT), BA(Melb)
L. Gomm, BEd, GradDipOrgBeh
A. Rodger, BBus, GradDipBusAdmin(SIT), BA(LaT)
J. Stewart, BA, BEd, MEdStud(Mon)

**Lecturers**

J.G. Batros, BSc, BA(Melb), TSTC
D. Cheung, BSc(Hons), MBus(Mon), DipAppChem(SIT)
F. DiVirgilio, BBus(CIT)
S. Grdovic, BBus(Hons)(Mon)
C. Jevons, BSc(Melb), GradDipBusAdmin(SIT)
A. Koch, MA(St. G.P.S. Warsaw), PhD(Wroclaw)
B. Lasky, BBus(PublAdmin)(RMIT), GradDipPersAdmin(Victoria), AITD
H. Russell, BBus(RMIT), GradDipEd(Hawthorn)
J. Shannon, BA(Qld)
M. Spark, BCA(VUW), MBA(GraniT), FAICD(AFAIM)
J. Stewart, BA, B.Ed, MEOSTUD (Mon)
T. Tyson, MA(Cambridge)
J. Westwood, BRef(AU), MScTourismMktg(Surrey-UK)
L. Willshire, MA(Melb)
Innovation and Enterprise

Chair
Professor L.M. Gillin, BMetE, MEngSc, ME(Eng), PhD(Cantab), ASME(Bail’t), FIEAust, FAM, FACE, FWACE

Leader, Innovation and Enterprise
K.G. Hindle, B(Anz)ANU, MBA(Adel)

Leader, Management
B.E. Irons, AM, DipElecEng(CTC), DipMechEng(CTC), GradDipMaintEng, FIEAust

Principal Lecturer
B.K. Johnson, BA, MEd(Alberta), PhD(Alberta)

Senior Lecturer
J.S. Chan, MEng(RMIT)

Lecturer
H. Evans, BBus(Mgt)(Deakin)
J. Legge, BSc(Melb)

Research Associate
J. Murray, BBus(SA), MEI(SUT)

Teaching Fellows
J. Bailey, DipEE, BComm, MBA, PhD(Melb), AAAM, FIEAust
I. Shedden, BChem(Eng)(Qld), FIChemE, FIAE, HonFellowE Aust
B. Whan, BE(Eng), PhD(NSW)

Course Administrator
V. Ronke, GCEM

School of Social and Behavioural Science

Head
Associate Professor K.J. Heskin, MA(Dub), PhD(Dunelm), C Psychol, AFPS, MAPSS

Media, Literature and Film

Chair
Associate Professor T. Barr, BEd(Lat), MA(SIT)

Senior Lecturers
H. Molnar, DipBusStuds, BA(Media)(RMIT), MA(UW-Madison), PhD(Politics)(Monash)
J. Ryan, BA(Eng), BEd(Lat)
D. Tofts, BA(Eng)(Lat), PhD(Melb)

Lecturers
J.J. Arnold, BA(Melb), DipEd(Melb), MACE
J. Barbour, BEng
A. Hakeem, MA(Dacca and Cantab)
J. Schwartz, BEc, BEd(Mon), ME(Eng)
K. Vigo, BA(Melb)

Philosophy and Cultural Inquiry

Chair
M. Hamey, MA, DipEd(Melb), PhD(ANU), GradDipArtAppFTV(SIT)

Senior Lecturers
H. Kannegiesser, BA(Melb), ME(Eng)
J. Love, BSc(Qld), CHPS(Cantab), MA, PhD(Melb)

Lecturers
A.E. Gare, BA(Hons)(WA), PhD(Murd)
P.I. Healy, MA, MS, PhD(PennState)

Psychology

Chair
A.D. Knowles, BA(Hons)(Melb), ME(Eng), PhD(Mon), MAPSS

Principal Lecturers
S.P. McLenahan, MA(ANU), PhD(Mon), GradDipEd(Haw), MAPSS

Senior Lecturers
G.W. Bates, BCom, BA(Hons), MA(ClinPsych), PhD(Melb), MAPSS, MAEMA
R. H. Cook, BSc(Hons)(Melb), EdD(Melb), MAPSS
G.H. Gottle, MSc(Caig), MAPSS
J. Wangeman, BA, BCom, BEd(Melb), MAPSS

Lecturers
B.M. Findlay, BA, BSc(Hons), MSc(Melb), MAPSS
V. Power, BA, GradDipAppPsych(SIT), MAPSS
P. Reddy, MA(Melb), MAPSS
M.C. van Geloven, Drs(Univ, of A'dam)

Sociology

Chair
J. Mulvany, BA(Hons), DipEd, PhD(Mon)

Associate Professors
T.W. Burke, BSc(Hons)(Mon), MSocSc(Birm), MEc(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, GradDipUrbSoc(SIT), PhD(Mon)
A. Seitz, DipRetailBusAdmin(Munich), BA(Hons)(Mon)

Centres
Division of Business, Humanities and Social Science academic staff are associated with the following:

Centre for Industrial Democracy
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 39-42 for details.)
# Courses offered in the Division of Business, Humanities and Social Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Campus</th>
<th>Course Mode</th>
<th>Part-time</th>
<th>Entry Requirements</th>
<th>Special Comments</th>
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<tbody>
<tr>
<td>N061</td>
<td>Certificate in Commercial Radio</td>
<td>H, MI</td>
<td>Full-time</td>
<td>2 years</td>
<td>Satisfactory completion of VCE or equivalent</td>
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<tr>
<td>N060</td>
<td>Associate Degree in Social Science</td>
<td>H, MI</td>
<td>Full-time</td>
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<tr>
<td>N050</td>
<td>Bachelor of Arts</td>
<td>H, MI</td>
<td>Full-time</td>
<td>3 years</td>
<td>Refer to course entries</td>
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<tr>
<td>N051</td>
<td>Bachelor of Arts (Psychology and Psychophysiology)</td>
<td>H</td>
<td>Full-time</td>
<td>3 years</td>
<td>Satisfactory completion of VCE or equivalent (including all English work requirements)</td>
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<tr>
<td>A055</td>
<td>Bachelor of Business plus Industry Based Learning</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>As above</td>
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</tr>
<tr>
<td>A064</td>
<td>Bachelor of Business (Honours)</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>As above</td>
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</tr>
<tr>
<td>A063</td>
<td>Bachelor of Business (Honours) plus Industry Based Learning</td>
<td>H</td>
<td>Full-time</td>
<td>5 years</td>
<td>Refer to course entries</td>
<td></td>
</tr>
<tr>
<td>A058</td>
<td>Bachelor of Arts/Bachelor of Business (Italian)</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>Refer to course entries</td>
<td></td>
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<tr>
<td>A057</td>
<td>Bachelor of Arts/Bachelor of Business (Japanese)</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>The business degree course combined with a major study in Japanese</td>
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<tr>
<td>A059</td>
<td>Bachelor of Arts/Bachelor of Business (Korean)</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>The business degree course combined with a major study in Korean</td>
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<tr>
<td>A065</td>
<td>Bachelor of Arts/Bachelor of Business (Vietnamese)</td>
<td>H</td>
<td>Full-time</td>
<td>4 years</td>
<td>The business degree course combined with a major study in Vietnamese</td>
<td></td>
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<tr>
<td>1050</td>
<td>Bachelor of Information Technology</td>
<td>H</td>
<td>Full-time</td>
<td>3 years</td>
<td>Taught in conjunction with the Division of Science, Engineering and Design</td>
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<tr>
<td>A070</td>
<td>Graduate Certificate in Business Administration</td>
<td>H</td>
<td>Full-time</td>
<td>1 year</td>
<td>Refer to course entries</td>
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<tr>
<td>A072</td>
<td>Graduate Certificate in Business Information Technology</td>
<td>H</td>
<td>Full-time</td>
<td>1 year</td>
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<tr>
<td>A074</td>
<td>Graduate Certificate in Taxation and Finance</td>
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<td>Full-time</td>
<td>1 year</td>
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<tr>
<td>Y072</td>
<td>Graduate Certificate in Enterprise Management</td>
<td>H</td>
<td>Full-time</td>
<td>1 year</td>
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<tr>
<td>Y073</td>
<td>Graduate Certificate in Training Management</td>
<td>H</td>
<td>Full-time</td>
<td>1 year</td>
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<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Campus</td>
<td>Course Mode</td>
<td>Full-Time</td>
<td>Entry Requirement</td>
<td>Special Comments</td>
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<tr>
<td>A083</td>
<td>Graduate Diploma in Business Administration</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
<td>For all graduate diplomas, a limited number of places are available for applicants with no formal qualifications but considerable work experience</td>
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<tr>
<td>A087</td>
<td>Graduate Diploma in Business Information Technology</td>
<td></td>
<td></td>
<td>1 year 2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>A086</td>
<td>Graduate Diploma in Corporate Finance</td>
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<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>A084</td>
<td>Graduate Diploma in Management Systems</td>
<td></td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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</tr>
<tr>
<td>A089</td>
<td>Graduate Diploma in Market Modelling</td>
<td></td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>A085</td>
<td>Graduate Diploma in Organisation Behaviour</td>
<td></td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N802</td>
<td>Graduate Diploma in Asian Studies</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N080</td>
<td>Graduate Diploma in Applied Philosophy</td>
<td>H</td>
<td></td>
<td>2 years</td>
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<tr>
<td>N084</td>
<td>Graduate Diploma in Applied Psychology</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N086</td>
<td>Graduate Diploma in Equal Opportunity Administration</td>
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<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N083</td>
<td>Graduate Diploma in Japanese</td>
<td>H</td>
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<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N087</td>
<td>Graduate Diploma in Japanese for Professionals</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<td>N088</td>
<td>Graduate Diploma in Korean</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N081</td>
<td>Graduate Diploma in Korean for Professionals</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N083</td>
<td>Graduate Diploma in Philosophy and Cultural Inquiry</td>
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<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N085</td>
<td>Graduate Diploma in Urban Research and Policy</td>
<td>H</td>
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<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>N089</td>
<td>Graduate Diploma in Writing</td>
<td>H</td>
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<td>2 years</td>
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<tr>
<td>Y081</td>
<td>Graduate Diploma in Management (by coursework)</td>
<td>H</td>
<td></td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma</td>
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<tr>
<td>Y082</td>
<td>Graduate Diploma in Entrepreneurship and Innovation (by coursework)</td>
<td>H</td>
<td></td>
<td>2 years</td>
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<td>Course Code</td>
<td>Course Name</td>
<td>Duration</td>
<td>Entry Requirements</td>
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<tr>
<td>A091</td>
<td>Master of Organisation Behaviour</td>
<td>2 years</td>
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<tr>
<td>A092</td>
<td>Master of Business (Information Technology)</td>
<td>2 years</td>
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<tr>
<td>A093/4/5</td>
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<td>Refer to course entries</td>
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<tr>
<td>A096</td>
<td>Master of International Business</td>
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<tr>
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<td>Master of Applied Philosophy</td>
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<tr>
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<td>2 years</td>
<td>Refer to course entries</td>
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<tr>
<td>N091</td>
<td>Master of Arts in Counselling Psychology</td>
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<tr>
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<td>Master of Arts in Japanese</td>
<td>2 years</td>
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<td>2 years</td>
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<tr>
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<td>Master of Arts in Philosophy and Cultural Inquiry</td>
<td>2 years</td>
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<tr>
<td>N093</td>
<td>Master of Arts in Urban Research and Policy</td>
<td>2 years</td>
<td>Refer to course entries</td>
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<tr>
<td>N095</td>
<td>Master of Communications</td>
<td>2 years</td>
<td>Refer to course entries</td>
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<tr>
<td>A099</td>
<td>Master of Information Technology</td>
<td>1 year</td>
<td>Refer to course entries</td>
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</tr>
<tr>
<td>A090</td>
<td>Master of Business (by research)</td>
<td>2 years</td>
<td>Refer to course entries</td>
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<tr>
<td>Y091</td>
<td>Master of Enterprise Innovation (by coursework)</td>
<td>3 years</td>
<td>Refer to course entries</td>
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</tr>
<tr>
<td>Y095</td>
<td>Master of Enterprise Innovation (by research)</td>
<td>3 years</td>
<td>Refer to course entries</td>
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<tr>
<td>A001</td>
<td>Doctor of Philosophy (Business)</td>
<td>2 years</td>
<td>Refer to course entries</td>
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<tr>
<td>A002</td>
<td>Professional Doctorate in Organisational Dynamics</td>
<td>2 years</td>
<td>Refer to course entries</td>
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<td>Doctor of Philosophy (Arts)</td>
<td>2 years</td>
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<tr>
<td>N002</td>
<td>Professional Doctorate in Psychology</td>
<td>2 years</td>
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<tr>
<td>Y001</td>
<td>Doctor of Philosophy (Innovation and Enterprise)</td>
<td>2 years</td>
<td>Refer to course entries</td>
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</table>
Prizes and Scholarships

The Division of Business, Humanities and Social Science 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 Division at all times encourages.

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 airfare 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.

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 Division of Business, Humanities and Social Science. Applications close in April.

Bourne Griffiths Swinburne Entrepreneurial Accountant Scholarship

Awarded for both academic achievement and other personal qualities to a business student who has completed at least two years of full-time study.

Aspect Computing Scholarship

Awarded on interview to a second stage computing student.

Swinburne Association of Marketing Scholarship(SAM Scholarship)

Awarded on the basis of need and academic performance to a full-time second or third stage student with a major study in marketing in the Division of Business Humanities and Social Science.

Annual awards are made by the following donors:

Arthur Andersen Prize

The best student in Financial Management 1.

Bill Hibble, Arthur Andersen Prize

The best performance in a computing programming subject.

Australian Chamber of Manufactures Prize

The best student in Industrial Relations.

Australian Chamber of Manufactures Prize

The best student in Industry and Government.

Australian Computer Society Prize

The best student in final stage computing practical work. (Awarded to a BAppSc student in 1994 — alternate years awarded to BBus 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 subjects.

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

For the ten best students in First Year Accounting.

1. The best student in Marketing and the Law.

2. The best student in International Business Law.

3. The best student in Advanced Tax.
Carlton and United Breweries Limited Prize

The best coursework 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

The best student in Information Systems 1.

Deloitte, Ross and Tohmatsu Prize Economics Prize

The best student in Macroeconomics.

Economics Prize

The best student in Microeconomics.

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 subject.

ICI Prize

The best final stage computing student.

Information Systems Prize

For best student in Programming 1.

Jim Watkins Memorial Prize

For best student in Environmental Economics.

KPMG Peat Marwick (incorporating Touche Ross and Co.) Prize

The best student in undergraduate Auditing.

KPMG Peat Marwick (incorporating Touche Ross and Co.) Business 1 Japanese Prize

The best second stage student in the BBus/BArts (Japanese) program.

Logica Prize

The best performance in Data Base Management Systems.

Monier Roofing Prize

The best student in International Trade.

National Australia Bank Prize

The best student in Economic Research.

National Mutual Prize


Promax Prize

The best student in Accounting 1.

Rigby Cooke Prize

The best student in Legal Environment of Business.

Siemens Ltd Prize

The best student in Computer Law.

The best student in Contract Law (2 prizes).

Swinburne Graduate Society

Best overall student in the Graduate Diploma in Business Administration.

Thomas Nelson Australia

Best student in Contract Law (2 prizes).

VicRoads Prize

The best student in Leadership and Change in Organisations.

The following prize is presented by Swinburne University of Technology:

TW. 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 Division'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 Division would therefore be unable to provide the nominated prize or scholarship.
General Divisional Information

Due to the amalgamation of the Faculties of Arts and Business into the Division of Business, Humanities and Social Science during 1994, a number of course policies and procedures are being reviewed, and where appropriate, amalgamated.

For this reason, students seeking information on course regulations such as exemptions, students at risk and progress review for 1995 should contact the Divisional office.

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).

Swinburne Graduate Society of Business

The Graduate Society of Business is the oldest of the Swinburne alumni chapters, having been formed in 1977 from the original graduating students of the first course of the Postgraduate Diploma in Business Administration.

Now in its eighteenth year, the Society has a network of over one thousand past students, and now encompasses and supports all current and past students in the Graduate Certificate, Postgraduate Diploma and Masters programs in the previous Faculty of Business — now the Division of Business, Humanities and Social Science.

The Society operates as an independent official body, represented by a committee, and relies on members' cooperative efforts to assist the cause of industry relevant and supported further education, extension of qualifications and industry networking both internally and externally to the university.

Current activities include regular newsletters, seminars, meetings and speakers, an extensive personal network, working business lunches, library membership and other benefits as part of the wider Alumni of the University.

Annual memberships $25, with optional life membership of $100, student membership of $10, and Library membership of $15.

For information contact: Brian Golland, President, P.O. Box 145, Camberwell 3124. Phone: 432 2511 BH or 435 6614 AH or fax 432 2500.

Undergraduate Course Information

N061 The Certificate in Commercial Radio

Course aims

The course aims to provide specific instruction in all aspects of radio broadcasting, with hands-on experience in announcing and news presentation. Other areas of tuition include voice training, production, copywriting, news writing and presentation, sales and promotions, music and programming, radio station management and computing skills.

Broader issues are introduced, including broadcasting ethics and codes of practice, media law and ownership, the impact of information technologies, and audience research. Training is conducted in Swinburne’s modern, fully-equipped radio centre, with personal access time available to all course participants.

An industry placement program will place students into metropolitan and **regional** commercial radio stations for several weeks during the course. This placement program is designed to allow participants to experience at first-hand the environment and operating style of commercial radio, gain feedback on their skills, and to make personal contacts within the industry.

Guest lecturers from the radio industry introduce and reinforce information presented in all areas. Regular station broadcasting from Swinburne's studios develop skills in programming, writing, production and presentation.

Participants in the course will have access to other courses run in Media Studies at Swinburne, including media criticism and public policy.

Course structure

Successful completion of the Certificate in Commercial Radio requires students to pass the following eight subjects:

- AM111 Radio in Australia
- AM112 Radio Management
- AM113 Radio Presentation 1
- AM114 Radio Presentation 2
- AM115 Radio Journalism 1
- AM116 Radio Journalism 2
- AM117 Advertising Copywriting
- AM118 Radio Advertising Production

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; Glenfern College, Ferntree Gully and Heathmont College, Heathmont in affiliation with Swinburne University of Technology. The course is also offered at Centralian College, Alice Springs (NT).

Graduating students will 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.

It provides basic skills in the areas listed above but its 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:

- Administration and Management
- Human Services
- Planning and Policy
- 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 Board of Studies. (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 Coordinator at Swinburne University of Technology. The management of Billanook College, Heathmont 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:

AD100 Analysis and Argument
AD101 Australian Government
AD102 Australian Society, the Economy and the Environment — 1
AD103 Australian Society, the Economy and the Environment — 2
AD104 Communication Skills
AD105 Individuals, Groups and Organisations
AD106 Information Technology — 1
AD107 Information Technology — 2

Plus two electives
AD108 issues in Multicultural Australia
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:
- AD200 Behaviour in Organisations
- AD203 Economic Decision-making in the Enterprise
- AD204 Equity and Opportunity in Australian Society
- AD206 Industrial Relations
- AD208 Negotiation and Change Management
- AD209 Report Writing

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Human Services**

Compulsory subjects:
- AD200 Behaviour in Organisations
- AD202 Data Usage and Interpretation
- AD204 Equity and Opportunity in Australian Society
- AD205 Health and Illness
- AD208 Negotiation and Change Management
- AD209 Report Writing

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Planning and Policy**

Compulsory subjects:
- AD202 Data Usage and Interpretation
- AD203 Economic Decision-making in the Enterprise
- AD204 Equity and Opportunity in Australian Society
- AD206 Industrial Relations
- AD209 Report Writing
- AD210 Research Skills

Plus four electives chosen from the range of second year subjects including Languages Other than English (AD212 and AD213).

**Public Relations**

Compulsory subjects:
- AD201 Culture and Ideas
- AD203 Economic Decision-making in the Enterprise
- AD207 Information Systems, Society and Technology
- AD209 Report Writing
- AD210 Research Skills
- AD211 Writing and Producing for Public Release

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 an application form from the providing colleges will need to be completed. Contact the Coordinator at Swinburne University of Technology for details.

**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, Heathmont and Glenfern Colleges.

**N050 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, synthesise 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, Mooroolbark
The Division of Business, Humanities and Social Science 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 during the day only at the Mooroolbark campus.

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 (A quota is applied to this subject.)
- 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 62.

(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.

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 Manager, Student and Course Administration, Division of Business, Humanities and Social Science.

(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 Manager, Student and Course Administration.

(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.

Course descriptions

Interdisciplinary Majors

The Division of Business, Humanities and Social Science 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 the political economy and international relations in some subjects, and on the historical-cultural background in others.

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>Subject Code</th>
<th>Subject Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ102</td>
<td>Introduction to Japan — ACultural Overview</td>
</tr>
<tr>
<td>AK102</td>
<td>Traditional Korea</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>Subject Code</th>
<th>Subject Title</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>Subject Code</th>
<th>Subject Title</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 subjects and three optional semester subjects chosen 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, students who wish to take AL202 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

<table>
<thead>
<tr>
<th>Core subject</th>
<th>Other subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP100 Australian Politics</td>
<td>AT118 Aboriginal Issues</td>
</tr>
<tr>
<td>AP112 Australian Identities (compulsory)</td>
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</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Stage 2

<table>
<thead>
<tr>
<th>Core subject</th>
<th>Other subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH204 Society, Culture and Resources</td>
<td>AL202 Contemporary Australian Writing</td>
</tr>
<tr>
<td>AM203 Popular Culture</td>
<td>AM207 Cultural Representation in Australia</td>
</tr>
<tr>
<td>AM207 Cultural Representation in Australia</td>
<td>AP207 Modern Australia (compulsory)</td>
</tr>
<tr>
<td>AS204 Models of Sociological Analysis</td>
<td>AT218 Archaeology</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Stage 3

<table>
<thead>
<tr>
<th>Core subject</th>
<th>Other subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH306 Practical Ethics</td>
<td>AL302 Australian Literature — 19th Century</td>
</tr>
<tr>
<td>AH307 Australian Science and Society</td>
<td>AL303 Australian Literature — 20th Century</td>
</tr>
<tr>
<td>AL202 Communication Studies</td>
<td>AM300 Cinema Studies</td>
</tr>
<tr>
<td>AM300 Cinema Studies</td>
<td>AS302 Sociology of Organisations</td>
</tr>
<tr>
<td>AP202 Europe, Capitalism and the Third World</td>
<td></td>
</tr>
<tr>
<td>AP300 Models of Sociological Analysis</td>
<td></td>
</tr>
<tr>
<td>AS204 Models of Sociological Analysis</td>
<td></td>
</tr>
<tr>
<td>AS206 Sex and Gender in Society</td>
<td></td>
</tr>
</tbody>
</table>

### 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 two subjects listed below.

In choosing subjects at stages 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 and Thought
  - AH205 Social Philosophy, Politics and Ethics
  - AH206 Society, Culture and Resources
  - AM203 Popular Culture
  - 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 Environmental Philosophy
  - AH312 Natural Philosophy and the Sciences
  - AL304 Cross-Cultural Perspectives
  - AL306 Renaissance Literary Culture
  - AM300 Cinema Studies

### 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;
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
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 division 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 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

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 beginner’s stream consists of AA109 and AA110 at stage one, followed by AA209 and AA210 at 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 in AA306 and AA310 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 Union.

The following subjects related to Italian studies are also offered:

- AA208 Twentieth Century European Literature and Thought
- AA308 Italian Business Practice
- AA312 European Union 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.

Students should note that in first year, semester two, AA107 and AA110 are each worth two semester subjects toward their degree subject total.

An honours program in Italian is available and MA and PhD programs by research and thesis in Italian are currently being offered. A double degree Bachelor of Business/Bachelor of Arts (Italian) is also available.

### Subjects offered

#### Stage 1
- AA102 Understanding Italy
- AA106 Advanced Italian 1A or AA109 Italian 1X
- AA107 Advanced Italian 1B or AA110 Italian 1Y

#### Stage 2
- AA211 The European Union
- AA206 Advanced Italian 2A or AA209 Italian 2X
- AA207 Advanced Italian 2B or AA210 Italian 2Y
- AA208 Twentieth Century European Literature and Thought

#### Stage 3
- AA306 Advanced Italian 3A or AA309 Italian 3X
- AA307 Advanced Italian 3B or AA310 Italian 3Y
- AA308 Italian Business Practice
- AA315 European Union 2
- AA313 Contemporary Italy

### Media, Literature and Film

#### Literature

The literature major is designed to provide students with the opportunity to consider literary works from a variety of historical periods, ranging from the renaissance to the twentieth century, and to explore the implications of cultural diversity in the literary traditions of Australia, America and post-colonial countries. In addition, the subjects offered are designed to encourage students to think critically about larger concepts beyond individual literary texts, such as the development of contemporary literary and critical theory, and the ways in which literature, as a form of communication, functions to give meaning to our experience and the world in which we live.

A literature major consists of either nineteenth or twentieth century literature at stage one, followed by a combination of any two of: Contemporary Australian Writing; Reading, Writing and Criticism; and American Literature at stage two, and three of the following stage three subjects, Nineteenth Century Australian Literature, Twentieth Century Australian Literature, Cross-Cultural Perspectives, Literature of the United States, and Renaissance Literary Culture.

#### Subjects offered

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Subjects offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL100</td>
<td>Twentieth Century Literature</td>
</tr>
<tr>
<td>AL101</td>
<td>Nineteenth Century Literature</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Subjects offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL202</td>
<td>Contemporary Australian Writing</td>
</tr>
<tr>
<td>AL204</td>
<td>Reading, Writing and Criticism</td>
</tr>
<tr>
<td>AL205</td>
<td>American Literature</td>
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<table>
<thead>
<tr>
<th>Stage 3</th>
<th>Subjects offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL302</td>
<td>Australian Literature — 19th Century</td>
</tr>
<tr>
<td>AL303</td>
<td>Australian Literature — 20th Century</td>
</tr>
<tr>
<td>AL304</td>
<td>Cross-cultural Perspectives</td>
</tr>
<tr>
<td>AL306</td>
<td>Renaissance Literary Culture</td>
</tr>
</tbody>
</table>

#### Media Studies

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, AM304, 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 subjects from AM202, AM204, AM206 and AM207. They may then choose three from AM303, AM304, 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 AM305, which is applicable to both streams, is based on selection from applicants at the end of first semester.

#### Subjects offered

<table>
<thead>
<tr>
<th>Stage 1</th>
<th>Subjects offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM102</td>
<td>Media and Meanings: An Introduction</td>
</tr>
<tr>
<td>AM103</td>
<td>Broadcast Media: Issues and Accountability</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage 2</th>
<th>Subjects offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM202</td>
<td>The Fifth Estate: New Media</td>
</tr>
<tr>
<td>AM203</td>
<td>Popular Culture</td>
</tr>
</tbody>
</table>
**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 an historical and 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 pages 55-57 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
  (Not available to students who have previously passed AH200 Moral and Political Philosophy.)
- **AH206** Society, Culture and Resources
  (Not available to students who have previously passed AH202 Technology and Society)

**Stage 3**

- **AH301** Rationality
- **AH306** Practical Ethics
- **AH307** Australian Science and Society
- **AH308** Social Studies of Science
  (Not available to students who have previously passed AH302 Social Studies of Science A.)
- **AH309** Special Topics in Philosophy
- **AH310** Approaches to Culture
- **AH311** Environmental Philosophy
  (Not available to students who have previously passed AH309 Special Topics in Philosophy)
- **AH312** Natural Philosophy and the Sciences
  (Not available to students who have previously passed AH304 Philosophy of Science A.)
- **AH313** Knowledge, Science and Reality
  (Not available to students who have previously passed AH305 Philosophy of Science B.)

**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 or three 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.

The School of Social and Behavioural Sciences also offers its undergraduate program on the Mooroolbark campus. The program on the Mooroolbark campus is identical to the Hawthorn campus program outlined above.

A co-major in psychology and psychophysiology is taught jointly by the Schools of Social and Behavioural Sciences and the School of Biophysical Sciences and Electrical Engineering. Places on this program are strictly limited and entry to the program is either via the Division of Business, Humanities and Social Science leading to the award of a Bachelor of Arts degree or via the Division of Science, Engineering and Design leading to the award of a Bachelor of Applied Science degree.

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. 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 (APsS). The minimum academic requirement for associate membership of the APsS is completion of an accredited four-year program of psychological study. The Swinburne Bachelor of Arts and Bachelor of Applied Science psychology majors have APsS accreditation.

In addition to its undergraduate and fourth-year courses, the School of Social and Behavioural Sciences offers a fifth and sixth year part-time coursework program leading to the award of a Master of Arts degree in Counselling Psychology. The School also offers a Professional Doctorate in Psychology by coursework and thesis, available for full-time study by selected students.

The School 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
AY203 Developmental Psychology
AY204 Social Psychology

Stage 3

AY312 The Psychology of Personality
AY319 Psychological Measurement
AY320 Psychological Foundations of Counselling
SM278 Design and Measurement 2A
SM378 Design and Measurement 3A

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 Division of Business, Humanities and Social Science 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 Division of Science, Engineering and Design. Students should consult the Division of Science, Engineering and Design 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. Students intending to major in Sociology are strongly advised to 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

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
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<tbody>
<tr>
<td>AS100</td>
<td>Sociology 1A</td>
</tr>
<tr>
<td>AS101</td>
<td>Sociology 1B</td>
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</table>

Stage 2

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS204</td>
<td>Models of Sociological Analysis</td>
</tr>
<tr>
<td>AS205</td>
<td>Sociology of Deviance and Social Control</td>
</tr>
<tr>
<td>AS206</td>
<td>Sex and Gender in Society</td>
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</tbody>
</table>

Stage 3

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS300</td>
<td>Urban Sociology</td>
</tr>
<tr>
<td>AS302</td>
<td>Sociology of Organisations</td>
</tr>
<tr>
<td>AS303</td>
<td>Current Issues in Sociology</td>
</tr>
<tr>
<td>AS306</td>
<td>Methodology of Social Research</td>
</tr>
<tr>
<td>AS307</td>
<td>Social Research and Policy</td>
</tr>
<tr>
<td>AS308</td>
<td>Migration and Ethnicity</td>
</tr>
</tbody>
</table>

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 only available at Mooroolbark during the day 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 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). Students enrolled in programs taught within the Division of Business, Humanities and Social Science may make application to transfer to other programs within the Division by completing an Application for internal Course Transfer available from the Divisional office, Level 9 of the Business and Arts building.

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 Arts subjects: 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 subjects one major must be taken from one of the approved business specialisations.

Key features of the major streams are described in the following section.
Accounting

Accounting is the basic language of business. The accounting subjects offered by the School of Commerce cover the 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’s 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 subjects 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 subjects in taxation, auditing, finance, accounting theory, management accounting and financial accounting.

All subjects are designed to integrate the theoretical concepts with the practical reality of today’s business environment. Students with an accounting major and other appropriate subjects 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 are recognised both here and overseas.

Many accounting graduates do not pursue careers in the public, but in organisations within industry, commerce, the public sector, the finance sector and in business consulting. These careers may well be in accounting or financial specialisations but many 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 subject, Legal Environment of Business, introduces students to basic legal concepts and important areas of business law. The subject 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 subjects 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 subjects to students.

Whilst not leading to a legal qualification, a business law major can lead to a range of careers 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 necessary for the successful analysis of everyday business problems and which 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 business modelling and other 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 business 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 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.
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 the 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 subjects which emphasise the relationship between industry and government; managerial economics; environmental economics; industrial relations; macroeconomic policy and economic techniques used in business.

The 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", i.e. their strategies are customer driven. Marketing deals with the building and implementation of customer focus.

The meaning of marketing is often misunderstood. One need look no further than the many advertisements without 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 "inward", 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 subjects 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:

- prepare students for a range of management roles in business;
- 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;
- develop students' capacity to reflect upon and understand their own, and others' behaviour;
- 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 for human resource management (HRM), leading to associate membership of the Australian Human Resources Institute (course accredited by 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 subjects, consisting of a core of seven subjects, and a combination of majors, minors and electives. A major consists of six subjects (at least two at stage three) from one specialisation. A minor consists of four subjects (at least one at stage three) from one specialisation.

Students should note the following restrictions on subjects that can be credited towards the Bachelor of Business:

- a maximum of twelve subjects from any specialisation;
- a maximum of ten stage one subjects;
- a minimum of four stage three subjects;
- the subject AT119 Academic Communication Skills cannot be used for credits towards the Bachelor of Business; and
- the subjects BC331 Taxation and BC336 Advanced Taxation may be counted towards either an Accounting or Law major or minor, but not both.

The seven core subjects are:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Description</th>
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<tbody>
<tr>
<td>BC110</td>
<td>Accounting 1</td>
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<tr>
<td>BE110</td>
<td>Microeconomics</td>
</tr>
<tr>
<td>BH110</td>
<td>Organisations and Management</td>
</tr>
<tr>
<td>BL110</td>
<td>Legal Environment of Business</td>
</tr>
<tr>
<td>BM110</td>
<td>Marketing Concept</td>
</tr>
<tr>
<td>BQ110/</td>
<td>Quantitative Analysis</td>
</tr>
<tr>
<td>BQ111</td>
<td>Information Technology</td>
</tr>
</tbody>
</table>

Accounting

Stage one (core subject)
BC110 Accounting 1

Stage two
BC220 Accounting 2 (A)
BC221 Corporate Accounting (A)
BC222 Management Accounting 1 (A)
BC223 Management Accounting 2 (A)
BC224 Financial Management 1 (A)
BC225 Auditing (A)
BC226 Risk Analysis and Financial Theory

Stage three
BC330 Accounting Theory (A)
BC331 Taxation (A)
BC332 Strategic Cost Management
BC333 EDP Auditing
BC334 Financial Accounting
BC335 Financial Management 2
BC336 Advanced Taxation

Business Law

Stage one (core subject)
BL110 Legal Environment of Business

Stage two
BL220 Contract Law (A)
BL221 Company Law (A)
BL222 Marketing Law
BL223 Computer Law
BL224 Retailing Law
EL225 Tourism Law

Note: BC331 Taxation and BC336 Advanced Taxation may be counted towards a business law major or minor but not both.

Stage three
BL330 Advanced Company Law
BL331 International Business Law
BL332 Employment Law A
BL333 Finance Law

Business Modelling

Stage one (core subject)
BQ110E Quantitative Analysis (Enabling) of
BQ110 Quantitative Analysis A or
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 (M).
### Computing

**Stage one (core subject)**
- BT110  Information Technology

**Stage two**
- BT220  Data Analysis and Design (C)
- BT221  Business Computing
- BT222  Business Computer Applications
- BT223  Information Systems 1 (C)
- BT224  Programming 1A (C)
- BT225  Programming 2
- BT226  Knowledge Based Systems
- BT227  Programming 1B(C)

**Stage three**
- BT330  Data Base (C)
- BT331  System Architecture 1 (C)
- BT332  System Architecture 2 (C)
- BT333  Information Systems 2
- BT334  Information Technology Strategies(C) or BT337
- BT335  Business Software Engineering (C)
- BT336  Advanced Application Development (C)
- BT337  Programming 2B (C) or BT334

### Economics

**Stage one (core subject)**
- BE110  Microeconomics

**Stage two**
- BE220  Macroeconomics (A)
- BE221  Managerial Economics
- BE222  Industry and Government
- BE223  Industrial Relations A
- BE224  Economic Evaluation
- BE226  Applied Macroeconomics
- BE227  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 subject)**
- BH110  Organisations and Management

**Stage two**
- BH220  Organisation Behaviour 1 A
- BH221  Human Resource Management 1 A
- BH222  Organisation Design A
- BH223  Dynamics of the Multi-Cultural Workplace A

**Stage three**
- BH330  Organisation Behaviour 2 A
- BH331  Human Resources Management 2 A
- BH332  Enterprise Bargaining A
- BH333  Managing Quality in Organisations A
- BH334  Asian Business

### Marketing

**Stage one (core subject)**
- BM110  The Marketing Concept

**Stage two**
- BM220  Market Behaviour (M)
- BM221  Marketing Research (M)
- BM222  Marketing Planning (M)

**Stage three**
- BM330  Product Management (M)
- BM331  Service Marketing and Management (M)
- BM332  International Marketing
- BM333  Communications
- BM335  Tourism Marketing
- BM336  European Business Studies
- BM337  Advanced Services and Marketing Management
- BM338  Asian Pacific Business Practices
- BM339  Marketing Channel Management (formerly BM 334 Retail Marketing)

### Other
- BH334  Asian Business (Korean/Thailand)
- BM300  Industrial Project (not counted towards degree)

(A) Mandatory subjects for professional recognition by ASCPA or ICA
(C) Mandatory subjects for Australian Computer Society accreditation
(M) Mandatory subjects for Marketing major
A Mandatory subjects for professional recognition by the Australian Human Resources Institute

### 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 Application 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.

### Industry based learning (cooperative education)

**Manager**
J.R.W. Gerrand, BEc, CPA

**Secretary**
R. Leithead

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 Division 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 Division.

Students are required to successfully complete a detailed report on their work experience year.

Whilst working, students are permitted to study one subject 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 Line
- BDO Parkhills
- BP
- BP Australia
- Bowater Ltd
- Bunge (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
- Scuderia 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 conveners.

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 subjects:

- BC220 Accounting 2
- BC221 Corporate Accounting
- BC222 Management Accounting 1
- BC223 Management Accounting 2
- BC224 Financial Management 1
- BC225 Auditing
- BC330 Accounting Theory
Australian Human Resources Institute
(course accreditation pending)

To be eligible for associate membership graduates would need to have followed their first stage core subjects with all eight organisation behaviour and human resource management subjects:

BH220 Organisation Behaviour 1
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 subjects from other discipline areas:
BE223 Industrial Relations
BL332 Employment Law

are also required, making a total of ten subjects 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).

Bachelor of Business/Bachelor of Arts (Language) — double degree

The Bachelor of Business/Bachelor of Arts double degree is of four years duration (thirty-two subjects) 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 subjects in order to complete the requirements of two degrees.

Entrance requirements
See section under Bachelor of Business on page 62.

Degree structure
Students must complete the core subjects of the business degree (seven subjects) and a major and minor chosen from one of the approved business specialisations (refer Bachelor of Business specialisations), a minimum of seventeen subjects; plus eleven mandatory subjects from the chosen language; and elective subjects which may be selected from subjects offered in either of the Arts or Business specialisations with the exception of AT119 Academic Communication Skills. Students should note that a maximum of twelve stage one subjects can be credited towards the Bachelor of Business/Bachelor of Arts.

The following language subjects are studied depending upon the language specialisation chosen:

Japanese

Beginner's stream
N103 Japanese 1A
AJ104 Japanese 1B (2 subjects)
AJ203 Japanese 2A
AJ204 Japanese 2B
AJ303 Japanese 3C
N304 Japanese 3D

Advanced stream
AJ105 Advanced Japanese 1A
AJ106 Advanced Japanese 1B (2 subjects)
AJ205 Advanced Japanese 2A
N206 Advanced Japanese 2B
N305 Advanced Japanese 3C
AJ306 Advanced Japanese 3D
Both streams — non-language subjects

A102 Introduction to Japan — A Cultural Overview
A1202 Communication in Japanese
AP204 Modern Japan

And one of
*A1307 Reading Japanese Newspapers
*A1308 Japanese for Tourism and Hospitality
*A1310 Japanese for Business and Industry

Elective
A1302 Work Experience in Japan
* May be taken as electives if not included as a stage three mandatory subject in the Japanese major.

Non-Language subjects
Three non-language subjects currently being developed.

Elective component
Students may choose to use the four elective subjects to complete an additional approved minor. This minor may be taken from either specialisations offered in the Business or Arts degree programs.

NO52 Bachelor of Arts (Honours)
The Division of Business, Humanities and Social Science 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 Divisional 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
Associate Professor Tanya Castleman

Conveners
Cultural Studies Strand — Dr. Arran Gare
Languages Strand — Dr. Alina Skoutarides
Psychology Strand — Dr. Glen Bates
Social Science Strand — Dr. Peter Love
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 Schools of Commerce, Management and Information Systems.

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 schools, divisions 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 Division of Business, Humanities and Social Science 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 subject (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 subject 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 subject is compulsory for all Bachelor of Business (Honours) students and no prerequisite is necessary. Subject to approval from the Division of Business, Humanities and Social Science Honours Committee, a pass in this subject at a graduate level may entitle the student to an exemption from this subject.

Discipline specific and research components
Students should seek advice from the Honours Convener in the appropriate school when formulating their discipline-specific course of study and their research project proposal.

Students may, subject to approval, undertake selected honours level coursework subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering school.

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 studies will be required to submit a written dissertation of approximately 15,000 words in length.

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 1995)
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

<table>
<thead>
<tr>
<th>Segment 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC110 Accounting 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT101 Computer Fundamentals</td>
<td>10.0</td>
</tr>
<tr>
<td>IT102 Introduction to Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>IT103 Business Applications and Systems 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT105 Behaviour and Communications in Org.</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Segment 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT201 Decision Analysis</td>
<td>10.0</td>
</tr>
<tr>
<td>IT202 COBOL programming</td>
<td>10.0</td>
</tr>
<tr>
<td>IT203 Business Applications and Systems 2</td>
<td>10.0</td>
</tr>
<tr>
<td>Plus two non-computing electives</td>
<td>each 10.0</td>
</tr>
</tbody>
</table>
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

The course is based on two, sixteen week semesters. Classes will be conducted either on Friday afternoons between 1.00pm and 6.00pm or on Saturdays from 8.00am to 1.00pm.

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 for Businesses
- BH403 Managing People and Organisations
- BM401 Marketing Management
- BT401 Business Software for PCs
- BT411 Computing for 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. The content of the Graduate Certificate in Business Administration (where BT411 is chosen instead of BT401) is equivalent to the first year of the Graduate Diploma in Business Administration and gives credit into the Graduate Diploma in Business Administration and the Master of Business Administration (MBA).

Fees

The Graduate Certificate in Business Administration is a full-fee paying course.

A072 Graduate Certificate in Business Information Technology

This course is equivalent to one semester of full-time study or two semesters part-time. A Technology stream and a Management stream are offered in the Graduate Certificate in Business Information Technology.
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 no 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.

Technology Stream — 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
- Introduction to Information Technology
- Computer Programming
- Information Systems Strategies
- Data Base Design and Implementation
- Systems Platforms and Networking

Progression to the Graduate Diploma in Business Information Technology
On completion of the Graduate Certificate in Business Information Technology (Technology Stream), students gaining entry to the Graduate Diploma in B.I.T. will be admitted with advanced standing. Entry is not automatic and is subject to academic performance and selection quotas.

Management Stream — 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
- BH414 Management, Organisation and People
- BT412 Current Issues in System Design
- BT413 Software Engineering Strategies (2 subjects)

Progression to the Graduate Diploma in Management Systems
On completion of the Graduate Certificate in Business Information Technology (Management Stream) students gaining entry to the Graduate Diploma in Management Systems will be admitted with advanced standing. Entry is not automatic and is subject to academic performance and selection quotas.

Fees
The Graduate Certificate in Business Administration Technology is a full-fee paying course.

A074 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 two years practical business experience at middle management level and a good track record as judged by the selection panel.

Course structure
- BC410 Introduction to Taxation
- BC411 Taxation Entities, Issues and Planning
- BC412 Introduction to Finance
- BC413 Investment Analysis

Progression to the Graduate Diploma in Corporate Finance
Students who perform well in the Graduate Certificate in Taxation and Finance will usually gain credit for up to four subjects in the Graduate Diploma in Corporate Finance.

Fees
The Graduate Certificate in Taxation and Finance is a full-fee paying course.

Innovation and Enterprise courses
The Centre of Innovation and Enterprise was established in 1991. The Centre is designed as a self-contained entity dedicated to excellence in innovative education. The Centre is currently housed within the Division of Business, Humanities and Social Science.

The Centre 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 Centre’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 Centre has an active consultancy division.

YO72 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 subjects into higher level degree programs offered by the Centre of Innovation and Enterprise.

Admission requirements
Applicants should comply with one of the following:

- There are no prerequisites other than discipline and commitment by an employee to a task, role or projects requiring skills in the management of innovation. A tertiary qualification would be an advantage.

b. Applicants may be admitted to the program at the considered discretion of the Head of the Division.

The graduate certificate provides the basic entry level for people seeking careers and qualifications in the management of innovation or it may serve to broaden the skills of managers qualified in other tertiary disciplines.

Duration of course
The program is designed to be completed within one calendar year of commencement of the first subject.

Course structure
Subjects are block taught in a modular structure and the course structure is as follows:

<table>
<thead>
<tr>
<th>Hours per module</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>EF810G Marketing for Innovation</td>
</tr>
<tr>
<td>42</td>
<td>EF811G Financial Planning for Innovation</td>
</tr>
<tr>
<td>42</td>
<td>EF813G Organising For Innovation</td>
</tr>
<tr>
<td>42</td>
<td>EF814G Strategy and Business Planning</td>
</tr>
</tbody>
</table>

Each subject is taught in two x three-day block modules (i.e. seven hours per day)
YO73  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 subjects into higher level degree programs offered by the Centre of Innovation and Enterprise.

Admission requirements
Applicants should comply with one of the following:

a. A first degree in any discipline and commitment by an employee to a task, role or project requiring skills in training management.
b. Applicants who lack a first degree may be admitted to the program at the considered discretion of the Head of the Division.

Duration of the course
The program is designed to be completed within one calendar year of commencement of the first subject.

Course structure
Subjects are block taught in a modular structure and the course is as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit</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 evaluation (four hours).

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 placed 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

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC503</td>
<td>Introduction to Financial Management</td>
<td>36</td>
</tr>
<tr>
<td>BE501</td>
<td>Economics</td>
<td>36</td>
</tr>
<tr>
<td>BH507</td>
<td>Organisational Psychology 1</td>
<td>36</td>
</tr>
<tr>
<td>BM501</td>
<td>Marketing Management 1</td>
<td>36</td>
</tr>
<tr>
<td>BQ509</td>
<td>Business Modelling</td>
<td>36</td>
</tr>
</tbody>
</table>

Second year

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC604</td>
<td>Financial Structures and Policy</td>
<td>36</td>
</tr>
<tr>
<td>BH605</td>
<td>Managing Human Processes</td>
<td>36</td>
</tr>
<tr>
<td>BM601</td>
<td>Marketing Management 2</td>
<td>36</td>
</tr>
<tr>
<td>BM603</td>
<td>Business Policy</td>
<td>36</td>
</tr>
</tbody>
</table>

The program is an intensive two year part-time course. All subjects 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 subjects 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 subject, 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 subjects and assigned alternative subjects in their place.

Alternative subjects

Candidates who are precluded from more than one first-year subject must choose, in consultation with the course convener, an alternative postgraduate subject.
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 on 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 subjects have been organised on a block system. All subject sessions will be offered on Monday morning between 8.00 am and 10.00 am and between 10.30 am and 12.30 pm. In addition, special seminars and subject seminars may be scheduled for one evening (normally Wednesday) between 6.00 pm and 9.00 pm.

Progression of the Master of Business Administration (MBA)
On successful completion of the Graduate Diploma in Business Administration graduates may be eligible to convert to the Master of Business Administration (MBA) degree with further study.

Fees
The Graduate Diploma in Business Administration is a full-fee paying course.

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 utilise 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:
- liaising between user areas and the computer department (business analyst)
- analysing and designing information systems
- programming
- evaluating software and hardware
- coordinating computer projects
- administering a computer function within an organisation
- marketing support for software and hardware suppliers
- education and training in information technology in schools, the computer industry or the public sector

Course structure
The course structure will require successful completion of eight subjects which may be selected (subject to prerequisite requirements) from the list below, provided at least four are of level three status.

The subjects are delivered at three levels:

Level 1
Introduction
BT504 Introduction to Information Technology

Level 2
Intermediate
BT506 Information Analysis
BT521 End User Computing
BT522 Business Computing Applications
BT523 Systems Analysis 1
BT524 Programming A (COBOL)
BT526 Knowledge Based Systems
BT527 Programming B (C)

Level 3
Advanced
BT630 Data Base Management Strategies
BT631 Communications and Architecture 1
BT632 Communications and Architecture 2
BT633 Systems Analysis 2
BT634 Systems Development Strategies
BT635 Business Software Engineering
BT636 Advanced Applications Development
BT637 Advanced Programming B

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 subject in the unlikely event that they have recently passed an equivalent subject elsewhere. In such instances candidates may select an elective subject after consultation with appropriate staff members.

Progression to the Master of Information Technology
Students who have completed the Graduate Diploma in Business Information Technology may progress to the Master of Information Technology program. Progression is not automatic and students would normally be expected to have attained an average of at least credit throughout their studies.

Course structure
The course is organised into an eight subject structure to be completed over two years of part-time study at the rate of two subjects 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 subjects offered.

First year
Semester 1
BC504 Corporate Financial Management 1
BQ601 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
BL502 Legal Aspects of Finance

Preclusions
Candidates may be precluded from attempting a subject in the unlikely event that they have recently passed an equivalent subject elsewhere. In such instances candidates may select an elective subject 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 subject 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.

A086 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 objectives
The Graduate Diploma in Management Systems is an advanced course for computer professionals. Its major aim is to enable people who already have substantial computer experience to obtain a broader knowledge so they can manage information systems more effectively within organisations.

Graduates of this course will be able to:
- understand the changes and advances in information technology; and
- apply these developments to business, industry and government concerns.
Practical management problems are used throughout the course. Students are expected to resolve these by applying appropriate systems and management techniques to ensure the provision of reliable and relevant information to management.

The Graduate Diploma in Management Systems provides highly relevant education to programmers, analysts, consultants, information systems managers and some user department representatives.

Participants will develop expertise in:

- managing systems development;
- developing management oriented systems; and
- managing information systems facilities.

**Course structure**

The course is in two parts, mandatory subjects and elective subjects.

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 subjects and candidates are required to take these from two groups as follows:

**Group 1**

The following subjects are compulsory:

- BT502 Current Issues In Systems Design
- BT503 Software Engineering Strategies (2 subjects)
- BT601 Systems Project Management
- BT602 Information Systems Management
- BT603 Management Systems

**Group 2**

Students must take an approved pair of subjects 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 (Information Technology). Candidates wishing to proceed to the Master of Business (Information Technology) 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 subjects including BT605 Systems Development Project (2 subjects).

**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:

- computing professionals progressing past the programmer level into systems analysis and project management;
- 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 computing 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.

**Progression to the Master of Business (Information Technology)**

The Graduate Diploma in Management Systems forms the first two years of the Master of Business (Information Technology). Progression into the Masters program is not automatic and students would normally be expected to have attained an average of at least credit throughout their studies.

**Fees**

The Graduate Diploma in Management Systems is a full-fee paying course.

**A089 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 program:

- 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.
- 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.
- 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

Program 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 Division of Business, Humanities and Social Science. 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 subjects 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 program structure consists of enabling subjects in information technology and statistics, a division generic core subject in Research Methodology, six core subjects and one elective subject.

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 subject in Research Methodology has been designed to meet the needs of all students proceeding to postgraduate studies. The subject aims to provide students with the basics for pursuing self-directed learning.

The core subjects are designed to provide students with the basic knowledge and skills necessary for developing and applying market models.

The elective subjects may be chosen from a subset of accredited subjects 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 program participants will choose subjects from within existing Division of Business, Humanities and Social Science graduate diplomas.

The program will be structured with the following subjects:

**Enabling subjects:**
- Information Technology (eg. BT504 Introduction to Information Technology).
- Quantitative Methods (eg. BQ221 Marketing Data Management or BQ222 Quantitative Management Techniques).

**Generic core subject:**
- BQ500 Research Methodology 2

**Core subjects**
- BE504 The Nature and Characteristics of Markets
- BM501 Marketing Management 1
- BM606 Marketing Research Methods
- BQ606 Business Demography
- BQ507 Market Modelling 1
- BQ607 Market Modelling 2

**Plus one elective subject from:**
- BC503 Introduction to Financial Management
- BC612 Forecasting and the Planning Process
- BH507 Organisational Psychology
- BT506 Information Analysis

**Fees**

The Graduate Diploma in Market Modelling is a full-fee paying course.

**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 objective of the course is to give candidates:

- 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;
- an opportunity to examine and to practise problem-solving and decision-making when handling people in the organisational context;
- a broadened outlook beyond their immediate area of specialisation.

**Course structure**

The program is an intensive two-year, part-time course. The subjects (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.
Both these subjects run for the whole academic year and have a total class time commitment of five hours per week. Each subject 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 are 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 subjects are taught concurrently over the whole year. Second year subjects are taken successively on a semester basis. The course is offered on either Wednesday or Friday between 8.00am and 1.00pm. Special or syndicate sessions may be scheduled where appropriate. A residential 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.

**Progression to the Master of Business (Organisation Behaviour)**

The Graduate Diploma in Organisation Behaviour forms the first two years of the Master of Business (Organisation Behaviour) program. Upon completion of the Graduate Diploma in Organisation Behaviour students who have performed at an above average standard, may apply for admission into the Masters program. Places at Masters level are limited.

**Entrance requirements**

Applicants with good undergraduate grades in psychology are interviewed by the Graduate Diploma Program Coordinator. The Coordinator prepares an order-of-merit list for entry to the course. The order-of-merit list is based primarily on the applicant's level of performance in his/her undergraduate psychology course. Where appropriate this is supplemented by taking into account reports of academic and professional referees, applicant's work background, and the stated reasons for wishing to undertake the course.

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
2. (b) have completed a three-year major sequence of studies in psychology in a course, or courses, approved by the Australian Psychological Society; or

**Fees**

The Graduate Diploma in Organisation Behaviour is a full-fee paying course.

**Graduate Diploma in Applied Psychology**

The course is offered as a one year full-time or two year 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:

- to enable students to understand and apply the principles of social science which underlie the discipline of psychology;
- to enable students to acquire knowledge of the principles of social and behavioural science research design and analysis;
- to enable students to extend skills in formulating research problems, gathering and analysing data, interpreting and communicating research findings;
- to enable students to acquire advanced knowledge in selected topic areas within psychology and applied psychology, building upon and extending basic undergraduate preparation;
- 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;
- to prepare students for entry level work as psychologists-in-training under supervision in occupational fields such as applied social research, the human services, and human resources.

Please check for current details with the Divisional office — 2148512.
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>Code</th>
<th>Subject</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY400</td>
<td>Applied Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AY401</td>
<td>Research Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AY403</td>
<td>Quantitative Methods</td>
<td>3</td>
</tr>
<tr>
<td>AY411</td>
<td>Counselling in the Human Services</td>
<td>3</td>
</tr>
<tr>
<td>AY413</td>
<td>Research Project and Report</td>
<td>variable</td>
</tr>
<tr>
<td>AY420</td>
<td>Assessing Persons and the Environment</td>
<td>2</td>
</tr>
<tr>
<td>AY422</td>
<td>Ethics and Professional Issues</td>
<td>2</td>
</tr>
<tr>
<td>AY426</td>
<td>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>1</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.

**Entrance requirements**

Applicants should hold a degree or diploma from an approved tertiary institution, but others having particularly relevant experience or qualifications will be encouraged to apply and will be considered for entry.

Applicants’ experience in the following areas will be taken into account in selection of participants:

- Work with community groups and groups with special needs
- Human resource management
- Industrial relations
- Unions
- Equal opportunity programs and related fields

Personal interviews may be conducted to ensure that the final selection of participants is based on individual merit.

**Course structure**

The course consists of four compulsory semester subjects. The subjects are as follows:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>AE400</td>
<td>Principles of Equal Opportunity</td>
</tr>
<tr>
<td>AE401</td>
<td>Data Usage and Evaluation</td>
</tr>
<tr>
<td>AE402</td>
<td>Equal Opportunity and the Workplace</td>
</tr>
<tr>
<td>AE403</td>
<td>Equal Opportunity Implementation</td>
</tr>
</tbody>
</table>

**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:

- general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and
- 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.

Reading material and tapes will be available at the Swinburne Bookshop approximately one week before the commencement of the semester. In all assignments, students are required to complete four minor tests, eight assignments, one research essay and one major test per subject. All classes are conducted in Japanese.

The subjects offered are:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ400</td>
<td>Japanese Society A</td>
</tr>
<tr>
<td>AJ401</td>
<td>Japanese Society B</td>
</tr>
<tr>
<td>AJ402</td>
<td>Japanese Culture A</td>
</tr>
<tr>
<td>AJ403</td>
<td>Japanese Culture B</td>
</tr>
<tr>
<td>AJ404</td>
<td>Japanese Business and Industry A</td>
</tr>
<tr>
<td>AJ405</td>
<td>Japanese Business and Industry B</td>
</tr>
<tr>
<td>AJ406</td>
<td>Japanese Politics A</td>
</tr>
<tr>
<td>AJ407</td>
<td>Japanese Politics B</td>
</tr>
</tbody>
</table>

Preliminary reading


References

Spahn, M. Japanese Character Dictionary, Tokyo, Nichigai, 1989

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 Graduate Diploma in Japanese for Professionals is offered as a part-time evening course. The Language component consists of 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

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ420</td>
<td>Graduate Diploma in Japanese for Professionals 1A</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1421</td>
<td>Graduate Diploma in Japanese for Professionals 1B</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJ422</td>
<td>Graduate Diploma in Japanese for Professionals 2A</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1423</td>
<td>Graduate Diploma in Japanese for Professionals 2B</td>
</tr>
</tbody>
</table>

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.
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:
- general problems and trends as they are analysed by Korean writers within the framework of the society as a whole; and
- 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 subjects 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 Korean for Professionals

The Graduate Diploma in Korean for Professionals is an intensive language course specifically designed for graduates with no previous studies in Korean. It provides vocational language skills and basic knowledge of the cultural, social, political and economic aspects of contemporary Korea.

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 Korean language skills and knowledge of Korea, 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

This is offered as a part-time evening course. The language component is six hours per week over four semesters.

Year 1

The language component in the 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
  - AK420 Graduate Diploma in Korean for Professionals 1A
  - AK421 Graduate Diploma in Korean for Professionals 1B

Year 2

The language component of the second year level is divided into a core segment of advanced grammar and a segment in which language pertinent to students’ professional needs is studied through reading and conversation.

- Semester 1
  - AK422 Graduate Diploma in Korean for Professionals 2A
  - AK423 Graduate Diploma in Korean for Professionals 2B

Supporting components:

Equivalent to two hours per week over four semesters.

The four supporting components are culture, society, politics/economy and communication.

These components take the form of five three hour seminars per semester, at times to be arranged.

Graduate Diploma in Urban Research and 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:
- the analysis of Australian urban development and the social and economic problems that derive from this development;
- the formation and characteristics of national, state, and metropolitan policies affecting the urban environment;
- 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
- AS411 Urban Research
- AS413 Applied Social Planning
- AS465 Urban and Regional Economics

Each student is expected to complete a research report relating to either policy issues or some aspect of urban policy and planning or community development. Where possible, research is developed in cooperation with government departments, consultancy firms, community groups and research institutes.

Graduate Diploma in Writing
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 freelance 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 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 0 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
- AL403 Narrative Writing
- AL405 From Book to Film: Textuality and Discourse
- AL407 Open Subject
- AM404 Writing for the Media
- AM406 Community Press

Y081 Graduate Diploma in Management

Career potential
This 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 and achieve 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 coursework and the case studies at graduate level relate management principles and practice particularly to the technology learnt during an undergraduate course.

Admission requirements
(a) The completion of a degree of 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 Division of Science, Engineering and Design 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.

Duration of course
The course is undertaken by one year of full-time study or two and a half years 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 Engineering 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.

**Introductory group**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF611</td>
<td>Management Fundamentals (1 sem)</td>
<td>4</td>
</tr>
<tr>
<td>EF614</td>
<td>Management Practice (1 sem)</td>
<td>4</td>
</tr>
<tr>
<td>EF612</td>
<td>Engineering Management (2 sem)</td>
<td>2</td>
</tr>
<tr>
<td>EF613</td>
<td>Industrial Engineering (2 sem)</td>
<td>2</td>
</tr>
</tbody>
</table>

EF611 and EF614 are offered full-time in semester two only. Only available to participants with at least three years full-time work experience; offered part-time in semester one only.

**Extending group**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF620</td>
<td>Human Aspects (1 sem)</td>
</tr>
<tr>
<td>EF621</td>
<td>Financial and Legal Aspects (1 sem)</td>
</tr>
<tr>
<td>EF623</td>
<td>Marketing (1 sem)</td>
</tr>
</tbody>
</table>

Two chosen from:
- EF622 Engineering Management
- EF625 Computing — Business Applications and Systems
- EF626 Computing — Engineering Applications and Systems
- EF629 Sales Management
- EF630 Manufacturing Management
- EF631 Physical Distribution Management
- EF633 Energy Management
- EF634 Civil Engineering Management
- EF635 Construction Technology
- EF711 Product Development and Life Cycles
- EF712 Opportunity and Feasibility Analysis
- EF713 The Entrepreneurial Organisation
- MM714 Risk Analysis
- MM715 Risk Engineering
- MM716 Risk Evaluation
- MM718 Risk Finance Management
- or other approved subject

Electives run for either two or three hours per week and for one semester. Electives can run in either semester and are dependent on demand.

**Integrating group**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF641</td>
<td>Management Practice (1 sem)</td>
</tr>
<tr>
<td>EF624</td>
<td>Management Practice (1 sem)</td>
</tr>
</tbody>
</table>

Offered full-time in semester two only.

Only available to participants with at least three years full-time work experience; offered part-time in semester one only.

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>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF711</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EF713</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EF715</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EF812</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Year 2**

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF712</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EF810</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EF811</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>EF814</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Graduate Diploma in Entrepreneurship and Innovation**

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:
- the completion of a degree or diploma in any discipline with experience in new business creation
- 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
- 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:
- the completion of a degree or diploma in any discipline with experience in new business creation
- 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 convener takes into consideration the balance of skills required for team participation and hence attendance at an interview may be required.

**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.
Masters degrees

A092 Master of Business (Information Technology)

The Master of Business (Information Technology) involves four years part-time study.

Course objectives
This course builds on the Graduate Diploma in Management Systems to provide additional management and business knowledge for students. The primary aim is to enhance the participants’ ability to function as top level managers, advisers and consultants to industry and government. Emphasis is placed upon:

- understanding the business potential of the latest developments and innovations in information technology;
- forecasting potential information technology trends for organisations;
- selecting, evaluating and measuring the effectiveness of information technology solutions;
- planning and controlling the changes brought about in organisations by the introduction of strategically important systems; and
- conducting research into an area of information technology selected by the student.

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)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Year four</th>
</tr>
</thead>
<tbody>
<tr>
<td>BQ703</td>
<td>BH707</td>
<td>BH802</td>
</tr>
<tr>
<td>BT708</td>
<td>BT707</td>
<td>Organisation Research Project and Thesis (under supervision)</td>
</tr>
<tr>
<td>Technology and Innovation</td>
<td>Management of Strategic Change</td>
<td>Project and Thesis</td>
</tr>
<tr>
<td>Technological Forecasting</td>
<td>Information Technology Effectiveness</td>
<td></td>
</tr>
</tbody>
</table>

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 coursework subjects 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 to 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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Year four</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH708</td>
<td>BH709</td>
<td>BH802</td>
</tr>
<tr>
<td>Processes of Inquiry and Research in Organisation Behaviour 1</td>
<td>Processes of Inquiry and Research in Organisation Behaviour 2</td>
<td>Organisation Research Project and Thesis (under supervision)</td>
</tr>
<tr>
<td>BH710</td>
<td>BH711</td>
<td></td>
</tr>
<tr>
<td>Processes of Inquiry and Research in Organisation Behaviour 3</td>
<td>Processes of Inquiry and Research in Organisation Behaviour 4</td>
<td></td>
</tr>
<tr>
<td>BH712</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 subject 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 subject 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 seven months full-time or twelve to eighteen months part-time.

**Course structure**

**A093**

**Full-time MBA — one year**

**Four days in residence**

A residential program is organised for students 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)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B802</td>
<td>Technology and Management</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project Planning (the project equals 4 subjects and continues throughout the year)</td>
</tr>
<tr>
<td>BC01</td>
<td>Accounting for Management</td>
</tr>
<tr>
<td>BE01</td>
<td>Economics for Management</td>
</tr>
<tr>
<td>BH06</td>
<td>Managing People and Organisations</td>
</tr>
<tr>
<td>BM01</td>
<td>Marketing for Management</td>
</tr>
</tbody>
</table>

**Term 2 (15 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B801</td>
<td>International Business</td>
</tr>
<tr>
<td>B803</td>
<td>Elective</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (continues)</td>
</tr>
<tr>
<td>BT04</td>
<td>Computing for Management</td>
</tr>
</tbody>
</table>

Term 3 (10 weeks)

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B804</td>
<td>Management and Society</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (concludes)</td>
</tr>
<tr>
<td>BM801</td>
<td>Business Planning and Policy</td>
</tr>
</tbody>
</table>

N.B.: Applicants who have qualified for the Swinburne Graduate Certificate in Business Administration may be credited with up to four subjects towards the full-time MBA.

**A094**

**Conversion to MBA from Graduate Diploma — full time**

**Term 1 (15 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B702</td>
<td>Management of Ideas</td>
</tr>
<tr>
<td>B801</td>
<td>International Business</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (Value 4 subjects. To be completed in seven months.)</td>
</tr>
<tr>
<td>BT04</td>
<td>Computing for Management</td>
</tr>
</tbody>
</table>

**Term 2 (10 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B804</td>
<td>Management and Society</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (concludes)</td>
</tr>
</tbody>
</table>

**A094**

**Conversion to MBA from Graduate Diploma — part-time**

**Term 1 (15 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B802</td>
<td>Technology and Management</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (Preparation for project which continues throughout the year and up to 18 months — value 4 subjects.)</td>
</tr>
</tbody>
</table>

**Term 2 (15 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B801</td>
<td>International Business</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (continues)</td>
</tr>
</tbody>
</table>

**Term 3 (10 weeks)**

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>B804</td>
<td>Management and Society</td>
</tr>
<tr>
<td>*B809</td>
<td>Strategic Project (continues)</td>
</tr>
</tbody>
</table>

A further period of approximately six months

*B809  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 subject.

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 subject 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 subject 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
The M.B.A. program is a full fee paying course.

Of this, half is due on acceptance into the course, and the remainder at the end of June.

Master of International Business

Program structure
The program consists of sixteen subjects, twelve by coursework and a four subject equivalent business project of 20,000 words. The subjects are organised into four stages, and are consistent with the objectives of providing a broad coverage and integration of the various disciplines studied. There are no electives, although students may choose the language and cultural stream they wish to pursue from those currently being offered.

These streams will normally be based on the language and cultural study programs available at Swinburne, which at present include Italian, Japanese, Korean and Vietnamese.

Students who wish to study a language and cultural program other than these four (e.g., overseas students seeking to take English language and Australian Cultural Studies) may be allowed to do so if a suitable program at Swinburne or another accredited institution can be identified.

Stage 1
B1711 Foundations of International Business
B1712 International Marketing
B1713 Business Language and Cultural Context A
B1714 International Business Project (Minor Thesis)

Stage 2
B1721 International Trade and Finance
B1722 International Marketing Research
B1723 Business Language and Cultural Context B
B1724 International Business Project (Minor Thesis)

Stage 3
B1811 International Financial Management
B1812 Legal Aspects of International Business
B1813 International Management
B1814 International Business Project (Minor Thesis)

Stage 4
B1821 Global Information Strategies
B1822 International Logistics Management
B1823 International Business Policy
B1824 International Business Project (Minor Thesis)

AO99 Master of Information Technology

This course is offered in conjunction with the Division of Science, Engineering and Design.

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, information technology management, 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 subjects of study in the Master of Information Technology course are organised into clusters, which are of the following three types:

Discipline clusters, consisting of four subjects with a common theme.

Complementary clusters, consisting of four subjects that complement the discipline cluster, previous experience and interests. Subjects 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 1995, the following clusters will be offered, subject to adequate demand.

Discipline clusters
Automated Systems Development

IT954 Advanced Database Technology
IT956 Advanced Databases and Systems Development
IT974 Systems Strategies
IT984 Automated Development Methods
Human-Computer Interaction
IT904 The Software Process
IT905 Software Engineering and one of
IT914 Systems Analysis
IT919 Intelligent Systems Applications
IT924 Object-Oriented Design and Programming
Real-Time Systems
IT934 IT Effectiveness
IT935 Strategic Alignment of IT
IT944 Advanced Database Technology
Research/Project Clusters

IT903 Software Engineering Project
IT913 Automated Systems Development Project
IT993 Research 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 (A072), 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)

The Division offers the degree of Master (by research and thesis) on a full-time or part-time basis. Applicants should have at least an undergraduate degree or the equivalent in a discipline appropriate to the proposed area of study. The level of academic achievement in prior studies must of a high standard. Other relevant activities, including work experience, will be taken into account in assessing applications.

Intending applicants should approach the Research Coordinator, or the Executive Officer, of the School in which they intend to undertake their studies. The Research Coordinator will refer the applicant to the appropriate member(s) of the staff who may act as supervisors for the degree. Formal applications for candidature, bearing the signatures of the supervisors and Head of School, are considered by the Divisional Research Committee.

The Statute for the degree of Master (by research) sets out the regulations governing this qualification.

Course structure

(1994 syllabus)

<table>
<thead>
<tr>
<th>Clusters/Subject</th>
<th>Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software</td>
<td>IT904 The Software Process</td>
<td>12.5</td>
</tr>
<tr>
<td>Engineering</td>
<td>IT914 Systems Analysis</td>
<td>12.5</td>
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<tr>
<td></td>
<td>IT924 Object Oriented Design</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td>and Programming</td>
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<tr>
<td></td>
<td>IT934 Real Time Systems</td>
<td>12.5</td>
</tr>
</tbody>
</table>

IT944 Advanced Database Technology 12.5
IT954 Information System Requirements 12.5
IT964 Resources for Information Systems Development 12.5
IT974 System Strategies 4 12.5
IT984 Automated Development Methods 12.5
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
IT909 Foundations of Intelligent Systems 12.5
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’

N090 Master of Arts (by research)

The Division offers the degree of Master of Arts (by research and thesis). Applicants should have a BA (Honours) degree or the equivalent of four years of undergraduate study in a discipline appropriate to the proposed area of study. The level of academic achievement in prior studies must be of a high standard. Other relevant experience, including work experience, will be taken into account in assessing applications.

Studies or the School of Social and Behavioural Science, as appropriate. The Research Coordinator will refer the applicant to the appropriate member(s) of staff who may act as supervisors for the degree. Formal applications for candidature, bearing the signatures of the supervisors and the Head of School, are considered by the Divisional Research Committee.

A candidate may be required to undertake preliminary coursework as part of the candidature. The culmination of the candidature is a thesis of between 20,000 and 50,000 words. The Statute for the degree of Master (by research) sets out the regulations governing this qualification.
Master of Arts in Counselling Psychology

This course is offered as a four year, part-time evening program. It is designed for students who have completed a first degree and have completed a four year sequence of studies in psychology. The course is intended to prepare graduates for professional practice as counselling psychologists.

The course has been granted full 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 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 School's Graduate Studies Committee. A student who is given an N or NA grade for a subject 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%), and an empirical research project (25%).

The overall structure of the course will be as follows:

Year 1
Semester 1
AY510 Human Services Research and Evaluation
AY511 Group Counselling Skills
Semester 2
AY512 Counselling Theory and Skills
AY513 Research Colloquium
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
AY517 Supervised Practicum Internship A
AY610 Professional, Ethical and Legal Issues
Semester 2
AY611 Counselling Psychology B: Psychology of Marriage and the Family
AY612 Supervised Practicum Internship B
Year 4
Semester 1
AY612 Supervised Practicum Internship B
AY613 Counselling Psychology A: Psychology of Work, Health Psychology
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:

Psychology of Work and Health Psychology of the Family

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 subject examining professional and ethical issues in Counselling Psychology Practice.
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.
Thesis length: 15,000-20,000 words.

Bachelor of Arts (Honours) (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.
Thesis length: 15,000-20,000 words.

Graduate Diploma in Japanese 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 Division.
(d) Minor thesis to be written in English with a substantial summary in Japanese.
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 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 language 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) Thesis: 15,000-20,000 words. The above program is the same as the Korean honours year program.

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.
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 honours 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 Division.
(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

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 and a half year full-time course, or a four semester part-time course.
The Masters degree consists of four subjects, including two compulsory core subjects, plus a minor thesis. Each subject involves three hours of coursework per semester. A minor thesis, of 20,000 words or equivalent, is to be undertaken concurrently. It is possible to select electives from N089, the Graduate Diploma in Writing.
The subjects are as follows:

Core subject
AM500 Globalisation: Media and Telecommunications
And one of
AM501 Communication Environments
CR
AM502 Asian Communications
### Core subject

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL408</td>
<td>From Book to Film: Textuality and Discourse</td>
</tr>
<tr>
<td>AM402</td>
<td>Writing, Theory, Praxis (Graduate Diploma in Writing)</td>
</tr>
<tr>
<td>CR</td>
<td>Writing for the Media (Graduate Diploma in Writing)</td>
</tr>
<tr>
<td>AM503</td>
<td>Interrogating Texts: Cultural Dreaming</td>
</tr>
<tr>
<td>AM504</td>
<td>Professional Production</td>
</tr>
<tr>
<td>AM505</td>
<td>Workplace Practice</td>
</tr>
<tr>
<td>AM506</td>
<td>Thesis (1-2 semesters) [Compulsory]</td>
</tr>
</tbody>
</table>

### Master of Enterprise Innovation

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 pioneering work of the Centre of Innovation and Enterprise 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.

### 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 the 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

<table>
<thead>
<tr>
<th>Weekly Contact Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF712 Opportunity and Feasibility Analysis**</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EF715 Accounting for New Ventures</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EF810 New Venture Marketing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EF811 New Venture Financial Planning</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EF814 The Business Plan</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Presented in block teaching mode generally on a Friday and Saturday

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)

<table>
<thead>
<tr>
<th>Weekly Contact Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF920 Managing the Growing Business</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EF923 Growth Venture Evaluation</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EF924 Advanced Business Plan 2</td>
<td>4</td>
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</tbody>
</table>

This year builds 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)

<table>
<thead>
<tr>
<th>Weekly Contact Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EF931 Entrepreneurship Corporations**</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>EF933 Integrated Innovation Management**</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>EF934 Entrepreneurial Research Project</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Presented in block teaching mode generally on a Friday and Saturday

The final year provides skills in the important areas of corporate entrepreneurship, a challenging course which stresses the integration of soft 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.
The Division offers the degree of Doctor of Philosophy on a full-time or part-time basis. Applicants should have a Master's degree or the equivalent in a discipline appropriate to the proposed area of study. The level of academic achievement in prior studies should be of a very high standard. Other relevant activities, including work experience, will be taken into account in assessing applications.

Intending applicants should approach the Research Coordinator, or the Executive Officer, of the School in which they intend to undertake their studies. The Research Coordinator will refer the applicant to the appropriate member(s) of staff who may act as supervisors for the degree. Formal applications for candidature, bearing the signatures of the supervisors and the Head of School, are considered by the Divisional Research Committee and the University Higher Degrees Committee. A candidate may be required to undertake preliminary coursework as part of the candidature.

The Statute for the degree of Doctor of Philosophy (page 443) sets out the regulations governing this qualification.

**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) per year to postgraduate researchers of exceptional promise.

**Industry Sponsored Scholarships**

The Division of Business, Humanities and Social Science has been fortunate to obtain a number of scholarships from industry for which its higher degree students can apply.

**Division Scholarships**

The Division of Business, Humanities and Social Science 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 Officer, Division of Business, Humanities and Social Science on 214 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

AA102  understanding Italy
No. of hours per week: three hours, evening only.
Prerequisites: nil
Assessment: by essay and seminar presentation

Subject aims and description
The aim of the subject 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 an 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

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 Union
No. of hours per week: three hours, evening only
Prerequisite: any stage one subject
Assessment: continuous

Subject aims and description
Introductory subject which outlines the historical, political, legal background of the European Union, analyses the role of European institutions and discusses the application of EU policy, with particular reference to Australian business.

References
Lane, P. Europe Since 1945, London, Thames Hudson, 1985
Worth, Harcourt, Brace Jovanovich, 1992

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

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.

The aim of the course is to consolidate and extend the work begun in semester one.

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 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.

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
Prerequisite: any two stage one 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. 3rd edn, Melbourne, Longman Cheshire, 1988

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 levels 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 topic/s with the subject convener 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 Business subjects or equivalent, and stage two Italian subjects 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 structures and environment, export/import practices, and linguistics 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. Taking 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. It is complemented by contemporary documents on present day Italy and appropriate films and other media.

Textbooks
A novel to be advised
Bregu-Hougaz, L. Opinioni. Melbourne, Q5 Educational, 1984

AA312  European Union 2 Study Tour
Of approximately three weeks to at least two EU countries
Prerequisites: AA102 (recommended)
Assessment: continuous

Subject aims and description
This subject is highly recommended for students with an interest in the European Union and for students enrolled for the Double Degree BBus/BA (Italian). It will provide an opportunity to examine the application of EU regulation, both from an end-user perspective and from the perspective of third countries such as Australia. It consists of a study tour of the institutions of the European Union and European business institutions, and includes some work experience in a European enterprise organisation.

AA313  Contemporary Italy
No. of hours per week: three hours
Prerequisites: AA307 or AA310 (AA207 or AA210 if the subject is being studied concurrently with AA307 or AA310)
Assessment: continuous

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, A4309 and AA310 (Beginner’s stream) or AA306 and A4307 (post-VCE stream) are normally completed prior to, or concurrently with AA313.

AD100  Analysis and Argument
No. of hours per week: three hours
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  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 runs over two semesters and highlights the development of Australian society, the economy and the effect of these developments on the natural environment.
Within this framework the subject examines the role of government and the means that are used to achieve its economic objectives. The conflict between objectives and the consequences for the Australian population are stressed. The focus for study is on issues derived from these elements and their importance within the context of macroeconomics.

Unit 2 of the subject develops and applies an understanding of microeconomic as well as macroeconomic concepts to a particular organisation or market within the economy. The case study approach will be based on an application of research skills to economic and social processes.

AD104 Communication Skills
No. of hours per week: three hours

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/AD107 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 applicants 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/AD110 Languages Other than English
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 the impact 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 broad 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 organisation, organising a data base, qualitative and quantitative research methods, data analysis, issues of confidentiality and ethics, monitoring techniques and models of evaluation. Training in 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, industrial relations, human resource 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
Shaffer, 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
Govier, T. Practical Study of Argument. 3rd edn, Belmont, CA, Wadsworth, 1992

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 subject 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 subject 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.

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.
References
Dubre, L. Marx's Social Critique of Culture. New Haven, Yale University Press, 1983

AH205 Social Philosophy, Politics and Ethics
No. of hours per week: three hours
Prerequisite: one of AH100, AH101, AH102, AH103 or approved equivalent
Assessment: continuous and by examination

Subject aims and description
The focus of this subject is the analysis and critical appraisal of contemporary social and political discourse. In addressing the central issues, two broad approaches (or a combination of these) may be adopted: the modernity/postmodernity debate, directly engaged through exploration of the positions defended by such contemporary thinkers as Habermas and Foucault; or the issues approached from an historical perspective via exploration of a range of positions from Plato to the present.

References
Consult with the lecturer before buying any books, as the recommended texts change depending on the orientation adopted in the course. But the following are likely to be useful:
Bernstein, R. The New Constellation, MIT Press, 1992
Maclntyre, A. A Short History of Ethics. London, Routledge, 1967

*AH206 Society, Culture, and Resources
No. of hours per week: three hours
Prerequisite: one of AH100, AH101, AH102, AH103 or approved equivalent
Assessment: continuous

Subject aims and description
Resources, people, survival, and development: within the general framework of social history this course emphasises the interaction between technology and social change from ancient to modern times. Politics, economics, religion, values, traditions, social structures, education, relations with neighbours, knowledge and skills, are factors which combine to influence the course of human development. Also considered are the moral dilemmas of industrial societies, including problems of pollution and environment control.

Preliminary reading

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.

References

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

References
Elliott, R. and Gare, A. Environmental Philosophy. Brisbane, University
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
Charlesworth, Farrall, Stokes, and Turnbull, Life Among the Scientists. Melbourne, Oxford University Press, 1989

*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

* Not available to students who have previously passed AH302, Social Studies of Science A.

AH309 Special Topics in 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
A series of advanced seminars on contemporary topics in philosophy or an intensive study of a particular topic. Topics may be chosen from any of the major areas. The topics chosen in any given year will depend upon the expertise of the lecturer in charge.

AH310 Approaches to Culture

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
Contemporary approaches to the study of culture draw on the European philosophical traditions of phenomenology, hermeneutics and structuralism. In this subject, we explore some key themes in these traditions. Themes include the notions of meaning and interpretation in relation to consciousness, signs and texts; different ways of understanding the contrasting methodologies of the natural and human sciences; different models that are proposed for the purpose of interpreting cultural phenomena; the interconnections between disciplines and the problematic nature of discipline boundaries.

Textbook
Consult with the lecturer before buying textbooks.

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 ethical 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. 2nd edn, Boston, Beacon Press, 1994


* Not available to students who have previously passed AH309 Special Topics in Philosophy.

**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 edn, 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

Kanegiesser, H. Knowledge and Science. South Melbourne, Macmillan, 1977

References


Kuhn, T. The Structure of Scientific Revolutions. 2nd edn, Chicago, University of Chicago Press, 1970


* Not available to students who have previously passed AH305 Philosophy of Science B.

**A102 Introduction to Japan — A Cultural Overview**

No. of hours per week: three hours
Prerequisites: nil
Assessment: continuous

Subject aims and description

This subject introduces historical and cultural topics of direct relevance to the development of Japanese art forms, culture and society. References in English are used.

Textbooks


References


Childs, M.H. Rethinking Sorrow: Revelatory Tales of Late Medieval Japan. Michigan, University of Michigan, 1991


Kishibe, S.H. The Traditional Music of Japan. Tokyo, Ongaku No Shu, 1984


Seidensticker, E.G. Low City, High City. New York, Knopf, 1983
AJ103  Japanese 1A
No. of hours per week: six hours
Prerequisites: nil
Assessment: continuous

Subject aims and description
This subject is 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 cassettes 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
Mizutani, O. and N. Nihongo Notes. Vols. 1 and 2, Tokyo, Japan Times, 1977

AJ104  Japanese 1B
Equivalent value two semester subjects
No. of hours per week: six hours
Prerequisite: 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
Machida, T. and Skoutarides, A. Nihongo, Dialogues and Aural Comprehension. Melbourne, Swinburne Press, 1985

Reference
Mizutani, O. and N. Nihongo Notes. Vols. 1 and 2, Tokyo, Japan Times, 1977

AJ105  Advanced Japanese 1A
No. of hours per week: six hours
Prerequisite: 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 competence level.

Textbooks

References
Mizutani, O. and N. Nihongo Notes. Vols. 1-2, Tokyo, Japan Times, 1979-80

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
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 6, 7 and 8, Melbourne. Swinburne Press, 1988
Mizuno, T. Dialogues and Aural Comprehension 2. Melbourne, Swinburne Press, 1992

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 subject as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

Textbook
Neustupny, J.V. Communicating with the Japanese. Tokyo, The Japan Times, 1987

Preliminary reading

References
Mizutani, O. & N. How to be Polite in Japanese. Tokyo, Japan Times, 1987

A comprehensive list of other references is available from the subject 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 skills. 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**  
Mizutani, O. and N. Nihongo Notes. Vols. 1, 2, 3, Tokyo, Japan Times, 1977  

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. 9-10, Melbourne, Swinburne Press, 1988  

**References**  
Mizutani, O. and N. Nihongo Notes. Vols. 1 and 2, Tokyo, Japan Times, 1977  

AJ205  **Advanced Japanese 2A**  
No. of hours per week: six hours  
Prerequisite: AJ106 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**  
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 9-10, Melbourne, Swinburne Press, 1988  

**References**  
Mizutani, O. and N. Nihongo Notes. Vols. 1-3, Tokyo, Japan Times, 1977  

AJ206  **Advanced Japanese 2B**  
No. of hours per week: six hours  
Prerequisite: AJ205 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. Japan and Australia. Melbourne, Swinburne Press, 1994  
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 11-12, Melbourne, Swinburne Press, 1988  

**Reference**  

AJ302  **Work Experience in Japan**  
Prerequisites: minimum three years of double degree Business/Arts (Japanese) studies including satisfactory completion of stage 3 subjects of the Japanese major  
Assessment: completion of the work-experience component: Report (2,500-3,000 words). Assessment on pass/fail basis  

This elective subject is only available to students undertaking the double degree Business/Arts (Japanese) course.  

**Subject aims and description**  
The objective of this elective subject is to provide students with a six months experience of living in Japan and working in a Japanese company as a regular employee.  

Preliminary coursework: A series of preparatory lectures on Japanese company structure, employer-employee relations and similar.  

Students who wish to take this subject should see the subject leader.
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, 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. *Catch Phrases*. Melbourne, Swinburne Press, 1992

Fukushima, N. *Signs and Ads*. Melbourne, Swinburne Press, 1993

Machida, T. *The Language of Service*. 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**  
Fukushima, N. *Japan and Australia*. Melbourne, Swinburne Press, 1991

Fukushima, N. *Catch Phrases*. Melbourne, Swinburne Press, 1994


**Reference**  


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 fieldwork 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 fieldwork 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**

**References**

AJ400 Japanese Society A

(Not offered in 1995)
No. of hours per week: four hours
Assessment: continuous

**Subject aims and description**
This subject provides an introduction to problems which exist in Japanese society. Topics include family problems, old age and social security, crime, suicide, gangster organisations, illegal immigrants, overseas students and female inequality. 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, 1995

**Reference**

Additional reading materials and reading guides are distributed to students enrolled in the course.

AJ401 Japanese Society B

(Not offered in 1995)
No. of hours per week: four hours
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.

**Textbook**

**Reference**

Additional reading materials and reading guides are distributed to students enrolled in the course.

AJ402 Japanese Culture A

(Not offered in 1995)
No. of hours per week: four hours
Assessment: continuous

**Subject aims and description**
This subject provides an introduction to the changing aspects of Japanese culture. Topics include history, religion, education, arts, language and traditions.

**Textbook**
Fukushima, N. Japanese Culture A. Melbourne, Swinburne Press, 1995

**Reference**

Additional reading materials and reading guides are distributed to students enrolled in the course.

AJ403 Japanese Culture B

(Not offered in 1995)
No. of hours per week: four hours
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**
Machida, T. Japanese Culture B. Melbourne, Swinburne Press, 1995

**Reference**

Additional reading materials and reading guides are distributed to students enrolled in the course.
**Subject aims and description**
This subject provides an introduction to various aspects of the Japanese political system. Topics include political parties and elections, local governments, political scandals, international relations, defence policies and environmental protection.

**Textbook**
Fukushima, N. Japanese Politics A. Melbourne, Swinburne Press, 1993

**Reference**
Additional reading materials and reading guides are distributed to students enrolled in the course.
Textbooks
Machida, T. and Skoutarides, A. Nihongo, Reading and Writing. Vols. 4-5. Melbourne, Swinburne Press, 1988
Machida, T. and Skoutarides, A. Ka wa (Conversation). Melbourne, Swinburne Press, 1989

References

A list of references for the contemporary Japanese society is available from the course coordinator

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 coordinator

AJ423 Graduate Diploma in Japanese for Professionals 2B
No. of hours per week: six hours — language component; two hours (or equivalent) — background component
Assessment: continuous

Subject aims and description
This subject is the continuation of AJ422 with similar content and assessment for both the language and background components. The background component introduces students to Japanese patterns of interpersonal communication.

Textbooks
A list of references for the communication in Japanese component is available from the course coordinator

AK102 Traditional Korea
No. of hours per week: three hours
Prerequisites: nil
Assessment: continuous

Subject aims and description
This subject provides an introduction to pre-modern Korea of particular relevance to the understanding of modern Korean society. The subject deals with the structure of politics and society of the Chosen Period (1392-1910), with particular attention paid to developments in Neo-Confucian thought during the period. The subject will use English language reference material.

Textbook

References
Note: The above sources will be supplemented by a variety of specialist journal articles.

AK103 Korean 1A
No. of hours per week: six hours
Prerequisites: nil
Assessment: continuous

Subject aims and description
The objective of the subject will be to introduce students to the Korean language and to give them a secure command of its basic structures. This will entail instruction in language patterns, grammar, reading, writing, aural comprehension and 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.

Students undertaking a major in Korean are strongly advised to enrol for AK102 Traditional Korea.

Textbook

AK104 Korean 1B
No. of hours per week: six hours
Prerequisite: AK103 or approved equivalent
Assessment: continuous

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 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, 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 course. Areas examined include DPRK-ROK relations, ROK-US relations, Korea’s role in the Pacific Rim and APEC with special emphasis on Australia-Korea relations.

References
Han, Sung-joo. 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 practice will be a wide range of topics is offered.

Textbooks
Kim, S. New Korean Reader 3, Melbourne, Swinburne Press, 1994
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: two 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
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
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
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: AK402 or equivalent
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
No. of hours per week: four hours
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
No. of hours per week: four hours
Prerequisite: AK404 or equivalent
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
No. of hours per week: four hours
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
No. of hours per week: four hours
Prerequisite: AK406 or equivalent
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
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
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

Subject aims and description
This subject surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasising the artist's awareness of, and increasing divorcement from, social concerns. The course includes English and European fiction and drama, and English poetry.

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 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 nineteenth century up to the time of Federation. Poetry during the nineteenth 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 a text that is not set for study, and keep a journal as preparation for class discussions. Classes will be discussion-based.

Preliminary reading
As for AL302
**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.

**Renaissance Literary Culture**

No. of hours per week: three hours  
Prerequisites: two stage two literature subjects or approved equivalents  
Assessment: continuous  

**Subject aims and description**  
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.

**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**  

**Writing Project**

No. of hours per week: two hours per fortnight over two semesters  
Prerequisite (or corequisite 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.

**Renaissance Literary Culture**

No. of hours per week: three hours  
Prerequisites: two stage two literature subjects or approved equivalents  
Assessment: continuous  

**Subject aims and description**  
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.

**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**  

**Narrative Writing**

No. of hours per week: three hours  
Assessment: a folio of writing, workshop participation and exercises  

**Subject aims and description**  
This subject introduces 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**  

**From Book to Film: Textuality and Discourse**

No. of hours per week: three hours  
Assessment: essay, script and seminar participation  

**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 culture.
textual discourse. Students will be encouraged to use and reflect upon different electronic modes of communication and delivery, and to utilise 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 Nova Mob, Sisters in Crime, fandom and fanzines, etc.

**AM102 Media and Meanings: An Introduction**

No. of hours per week: three hours
Assessment: continuous

**Subject aims and description**

This subject introduces an analytical approach to media texts. Though it will refer to print and radio forms, it will primarily concern itself with film and/or television. Our interest in studying these texts is not so much to establish their worth, or otherwise, as to draw attention to the mechanics of our work as readers, to the ways in which we produce meanings from (or are confused by) the texts, to the methods they use in order to produce meanings, and to the values they embody in their representations. 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
Fiske, J. Television Culture, London, Methuen, 1987

**AM103 Broadcast Media: Issues and Accountability**

No. of hours per week: three hours
Assessment: continuous

**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 relationship 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
Armstrong, M. Media Law in Australia, 2nd edn, Melbourne, Oxford University Press, 1988
Bonney, W. and Wilson, H. Australia's Commercial Media, Melbourne, Macmillan, 1983
Chadwick, P., Media Mates: Carving up Australia's Media, South Melbourne, Macmillan, 1989
Inglis, K.S. This is the ABC. The Australian Broadcasting Commission 1922-1983. Melbourne, Melbourne University Press, 1983

**AM111 Radio in Australia**

No. of hours per week: three hours
Assessment: continuous

**Subject aims and description**

This subject provides an historical and current overview of radio in Australia, including commercial, government and community stations, and the ownership and control regulations currently in place. The employment structure and roles of staff are examined in detail, as are the technical operations and programming philosophies. Methods of audience surveying and analysis are studied and related to the radio station's programming and promotional activities.

Assessment
Assessment will include analysis of the formats of stations and the survey results for different Australian markets. From this initial study detailed programming exercises will be developed, which will be integrated into the Radio Presentation 1 subject.

References
Keith, M., Radio Programming, Boston, Focal Press, 1987
Higgins, C., Moss, P., Sounds Real, St. Lucia, Qld., University of Queensland Press, 1982
Potts, J., Radio in Australia, Kensington, NSW, New South Wales University Press, 1989
AM112  Radio Management
No. of hours per week: three hours

Subject aims and description
This subject will explore the nature and detail of current broadcast legislation and regulations and the legal issues faced by owners and broadcasters relating to defamation and contempt of court. A major focus will be the marketing of a radio station to its clients and audience, and selling radio airtime. The aims of promotions will be analysed and the methods of staff selection and management, including awards and union interests, will be examined. The impact of new technologies, including satellite services, cable, narrowcast and in-store radio will be examined, along with the applications and improvements in computer systems and digital audio technology.

Assessment
Assessment will include analysis of the marketing and promotion of stations, the design of a marketing plan for a station and an assessment of students’ understanding of radio sales techniques.

References
ABC All Media Law Handbook, ABC Enterprises, 1990
Determination of Planning Priorities, Canberra, Australian Broadcasting Authority, 1993

AM113  Radio Presentation 1
No. of hours per week: two hours

Subject aims and description
This subject aims to develop practical understanding of the radio presentation process, teaching the skills necessary to use broadcasting equipment and effectively communicate with an audience. Individual tutoring on studio equipment is followed by voice training and development of an individual style for each student. Structured assignments are designed to lead students to proficiency in operating techniques and communication. Writing assignments develop in students the ability to prepare efficiently and deliver information effectively, and students will learn to plan the sequential flow of a radio program.

Assessment
Assessment will revolve around programs recorded to the strict guidelines of assignments, along with assessment of the written scripts. Assessment will consider news accuracy, writing style, operational proficiency and vocal presentation.

References
Welch, D. and Hels, M., Swinburne Radio Production Notes, Hawthorn, Swinburne Press, 1991

AM114  Radio Presentation 2
No. of hours per week: two hours
Prerequisite: pass in AM113 Radio Presentation 1

Subject aims and description
This subject further develops understanding of radio presentation techniques, using more advanced broadcasting equipment and more difficult programming techniques. Once again, structured assignments are designed to lead students to proficiency in program preparation, operating techniques and self-evaluation. Skills in interviewing are developed through a structured plan, beginning with simple, short pre-recorded interviews leading to live in-depth talkback interviews. Students will use their skills to program and operate an in-house broadcasting service.

Assessment
Assessment will revolve around programs recorded to the guidelines of assignments, and will consider operational and programming proficiency, preparation and vocal presentation and the ability to relate to an audience.

Reference
Olle, A., On Interviewing, Sydney, ABC Enterprises, 1992

AM115  Radio Journalism 1
No. of hours per week: three hours

Subject aims and description
This subject aims to examine in detail the role and responsibilities of a radio news journalist. It will develop in students an understanding of the sources of news and skills in researching information. Students will gain experience in writing concise news stories, with an understanding of the conventions of writing for the ear. News bulletins will be prepared and broadcast at defined times, as part of an in-house broadcasting service.

Assessment
Assessment will include news bulletins recorded to the strict guidelines of assignments, along with assessment of the written scripts. Assessment will consider news accuracy, writing style, operational proficiency and vocal presentation.

References
Hogan, T., Radio News Workbook, North Ryde, NSW, Resources Unit, Australian Film and TV School, 1985
Milne, G., The Radio Journalist, Sydney, Wesgo Communications, 1979

AM116  Radio Journalism 2
No. of hours per week: two hours
Prerequisite: pass in AM115 Radio Journalism 1

Subject aims and description
This subject will further explore and develop the role of a radio news journalist. It will direct students to extend their skills in researching, interviewing and editing news programs, and to develop their contacts. Students will gain experience in writing and presenting current affairs reports, incorporating live and pre-recorded interviews.

Assessment
Assessment will include recorded bulletins and current affairs reports and written preparation and analysis. Assessment will consider accuracy, writing and vocal style and public interest.

Reference
Mayeux, P., Broadcast News Writing and Reporting, Lincoln, W.C. Brown, 1991

AM117  Advertising Copywriting
No. of hours per week: three hours

Subject aims and description
This subject is designed to explore, understand and master the processes involved in writing radio commercials. Structured assignments will lead the student through a process of interacting with an advertising client, gaining the skills to understand and interpret the needs of that client.
developing the creative writing ability to condense the information into a script of pre-determined timelength that will effectively communicate the message to its intended target, and layout the script ready for client approval and recording. Integral to this process is the development of a clear understanding of the nature of the listening audience and their interaction with the radio medium, to effectively deliver the advertising message.

**Assessment**

Students will be required to present client briefs completed as part of structured assignments, and to prepare and present finished scripts.

**References**


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**AM118 Radio Advertising Production**

No. of hours per week: three hours

Prerequisites: pass in AM113 Radio Presentation 1 and AM117 Advertising Copywriting.

**Subject aims and description**

This subject will develop the skills to identify the structures of sound and the nature of human auditory responses. Students will develop basic recording and editing skills, progressing to advanced multi-track recording and digital recording and editing. Students will be able to record commercials, promotional scripts and programs to a standard ready for professional broadcasting.

**Assessment**

Assessment will require students to take a written script to the final recorded commercial ready for broadcast. Through a series of graded assignments, skills will be assessed in recorded voice clarity, the use of music and sound effects, creativity, correct identification and labelling and technical quality.

**References**


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**AM202 The Fifth Estate: New Media**

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 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**


Wheelwright, E. and Buckley, K. (eds), *Communications and the Media in Australia*, Sydney, Allen and Unwin, 1987


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**AM203 Popular Culture**

No. of hours per week: three hours

Prerequisites: AM102 or AM103

Assessment: continuous

**Subject aims and description**

This subject will introduce issues and debates in contemporary culture and cultural analysis. It will investigate the diversity of images, ideologies, meanings and practices which comprise popular culture. Attention will be drawn to the ongoing developments and changes in popular culture in Australia in the 1990s. Special emphasis will be placed on the role and significance of the media and its representations of popular culture.

The subject will also consider the commercial and institutional imperatives shaping popular culture and its multiple relations to political processes. Major theoretical reference points in this subject will include Marxist, feminist, post-modern and structuralist analysis of late capitalism. Consideration will be given to the ongoing debates which surround cultural meanings and practices in the current Australian context.

The central aim of the subject is to encourage students to engage in a critical analysis of the culture around them. Students will be able to draw on their own experiences of culture and critically examine their own conceptions of meaning, and the pleasures of involvement.

**References**

Fiske, J. *Understanding Popular Culture*, Boston, Unwin Hyman, 1989

Fiske, J. *Reading the Popular*, Boston, Unwin Hyman, 1989


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**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 Filmaking in Australia, Richmond, Greenhouse, 1987
Kaplan, E. Regarding Television: Critical Approaches — an anthology (Frederick, Md), University Publications of America, 1983
Fair Exposure, Canberra, Australian Government Printing Service, 1983

AM026 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 Soviet 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
Roscho, B. Newsmaking, Chicago, University of Chicago Press, 1975
Tiffen, R. The News From South-East Asia: the Sociology of Newsmaking, 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
O’Regan, T. Australian Television Culture, St. Leonards, NSW, Allen & Unwin, 1993

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 films noirs, 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
Cineaction, Cinema Papers, The Journal of Popular Film and Television, Screen, Wide Angle, Film Comment
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
The course aims to introduce students to the theory and practice of radio in Australia. Students are introduced to the theoretical constructs and debates which have directed the communities and individuals during the past seventy years. We consider the impact that radio has had on the lives of both communities and individuals during the past seventy years.

We examine those aspects of radio which have set it apart from other media — its ephemeral quality, its reliance on orality and its intimate relationship to its audience. For example, Potts in Radio in Australia argues that any human society establishes itself by imposing form on the world of natural noise. He points out that the aural space occupied by radio has continually shrunk throughout the twentieth century to the point where the complete privatisation of sound via the Walkman has rendered sound consistent with the individualisation of post-industrial society. Other theorists, such as Marshall McLuhan, saw radio as having the ability to "tribalise" its listeners making it a potential agent for great political change. We examine these and other theories as they relate to the radio medium itself.

Finally AM302 is a production course and aims to equip students with the skills necessary for successful participation in radio production — sound recording, editing, panel operation, voice production and interviewing are all covered. While the acquisition of production skills is an essential part of the course, the broader context of how those skills can be applied is always kept in mind.

Textbook

References
Brecht, 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, S. 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 course aims to extend the knowledge gained by students in AM302 and allows students the opportunity to both apply and extend their radio production skills. Building on the skills developed in the previous semester's work, students are involved in the production of documentary programs with the aim of securing broadcast airtime on one of Melbourne's public radio stations. Students work in close contact with the producers from 3ZZZ, 3PBS, 3RRR, Public Radio News and various other community stations.

The emphasis of this course is on praxis — students are encouraged to apply the theoretical knowledge of radio textual analysis to their own productions and are encouraged to constantly review their own and other's work with reference to the theoretical constructs examined in AM302. They are also expected to keep abreast of changes and developments in the radio industry.

Textbook

References
As for AM302

AM306 Professional Attachment Program
Fifteen days
Equivalent value — one semester subject
Prerequisites: five media studies subjects
Assessment: continuous. AM306 is a pass/fail only subject.

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, and students will be required to keep a diary account of their attachment.

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.
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 subject 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 evolution 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 PageMaker desktop publishing package.

References

* Not available to students who have previously passed AM308 Local Press, Production and Politics.

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 utilised 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
Forester, R. The Cult of Information. New York, Pantheon Books. 1986
Reinecke, I. Connecting You... Ringwood, Penguin Books. 1985
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%

Subject aims and description
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
Wilson, L. 'The State of Strategic Planning', Technological Forecasting and Social Change. Vol. 37, No. 2. April 1990

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%

Subject aims and description
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 Hukill, 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%

Subject aims and description
This subject 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.
AM504  Professional Production

Subject aims and description
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

Subject aims and description
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

Subject aims and description
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 subjects. 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

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.

References

References

No. of hours per week: three hours
Prerequisites: nil
Assessment: presentation of workplace proposal 40%, final report 60%
**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**  

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**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**


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**AP102  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 sequence of Australian Studies subjects. This subject examines the relationship between citizenship and contemporary social movements. It begins with an analysis of the core ideas which have shaped Australian national identity. It goes on to explore the role of gender identity in the emergence of contemporary feminism. This is followed by a study of how the shared experience of work gave rise to the labour movement, and how cultural heritages have been politically mobilised as ethnic identities. The subject concludes with an examination of how the promise of formal equality underlying the nationalist idea of common citizenship has been contested by these contemporary social movements.

**Preliminary reading**


**Textbook**


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**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**

Evans, G. and Grant, B. Australia's Foreign Relations in the World of the 1990s. Carlton, Vic., Melbourne University Press, 1992  

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**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/autobiographical 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 1995)  
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: essays and/or exam  

**Subject aims and description**  
Discussion centres around the problems of Japanese nationalism reflected in the nature of Japan's modernisation, the consequences of her emergence as a world power, her 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, of 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 long 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 1995)
(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 Khrushchev 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 1995 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

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 hours

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, industrialisation, women in the labour force, caste and social status, and population and family planning.

**References**

Alavi, H. and Harriss, J. (eds) *South Asia*. Basingstoke, Macmillan, 1989


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 hours

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 age. Contemporary issues such as technological change, labour market deregulation and unemployment are also addressed.

**Preliminary reading**


**AS100 Sociology 1A**

No. of hours per week: three and a half hours daytime or three hours evening

Prerequisites: nil, but note that AS100 and AS101 are normally taken in the one year

Assessment: essays, examination and class participation

**Subject aims and description**

This subject is concerned with the social construction of human behaviour and society. It begins by focusing upon individuals and groups, examining how self-concepts, behaviour and ideas are socially formed and how everyday interactions are negotiated accomplishments.
The subject also deals with social structures and power relationships which shape the destinies of individuals and groups. We will discuss such issues as social class, gender, ethnicity and the state. The subject includes consideration of the methods and theories whereby sociologists produce knowledge about the social world.

Reference
To be advised

AS101  Sociology 1B
No. of hours per week: four and a half hours
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.

Reference
To be advised

AS204  Models of Sociological Analysis
No. of hours per week: three hours
Prerequisites: AS100 and AS101, and AP112 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 nineteenth Century thought and their influence on present-day social thinking. The works of Mam, 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
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 essays 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
Eisenstein, H. Contemporary Feminist Thought London, Unwin, 1984
Hughes, K.P. (ed.), Contemporary Australian Feminism, Melbourne, Longman Cheshire, 1994
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
Patterns of urban work and leisure are being transformed, as are the spatial and temporal relationships within and between cities. Old industries such as those centred around mass production are being replaced by new ones centred around tourism, information technology, financial services and the production of the modern spectacle (like grand prix car races, casinos, and the like). Cities are being differentiated globally. They are also being fragmented internally by deep and enduring inequalities in access to resources such as housing.

Urban sociology examines these trends. It locates them in a broader theoretical debate about the role of cities. Emphasis is given to the policy implications of these changes and the difficulties governments face solving urban problems in cities that are increasingly 'going global'.

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 approach, post modern 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
Commoner, B. Making Peace with the Planet, New York, Pantheon Books, 1990
Harding, G. Living Within Limits, New York, Oxford University Press, 1993

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
Migration and Ethnicity

Subject aims and description
International migration pressures in Western societies are widespread and growing, as are tensions over settlement and integration. This subject examines social and political factors shaping these processes with examples drawn from Australia, North America, France and Germany. It analyses theories that attempt to explain the international movement of people and theories focused on the development of ethnicity.

References

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.

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.

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.

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.

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.

Applied Social Planning

Subject aims and description
In this subject the role of the social scientist in the social planning process is examined. While emphasising 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.

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 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.

Writing Fiction

Subject aims and description
This subject will introduce students to the range of skills required by 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.
The central theme of the subject is the relationship between land and culture, from dispossession and de-
AV103 Vietnamese 1A

No. of hours per week: six hours
Prerequisites: AV102
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 the 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.

The teaching method is based on class work. As no previous knowledge of the language is presumed, some time will be devoted to the description of the language, the present system of writing and the essential syntax of the language. By working through a series of graded and contextualised dialogues students will begin to develop reading, writing, listening and speaking skills.

Textbooks
Thompson, L. Vietnamese Grammar: Hawaii, University of Hawaii Press, 1984/5

References
Ton-That, Q.-D. Beginner Vietnamese Book 2. Monash University, 1993
Other materials will be provided by the lecturer

AV104 Vietnamese 1B

No. of hours per week: six hours
Prerequisite: AV103 or approved equivalent
Assessment: continuous

Subject aims and description
This subject is a continuation of AV103. 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. The content of this subject includes 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, 1984/5
Vuong, G.T. Vietnamese in a Nutshell. New Jersey, Montclair, 1975

References
Ton-That, Q.-D. Beginner Vietnamese Book 3. Monash University, 1993
In addition videotaped materials and texts selected by the lecturer will be provided

AV203 Vietnamese 2A

No. of hours per week: six hours
Prerequisite: AV104 or approved equivalent
Assessment: continuous

Subject aims and description
This subject aims to consolidate the knowledge gained in the first year of the Vietnamese major and to build the students' communicative competence. The context of language usage covers aspects of daily life in Australia.

Students will read and analyse texts to introduce new structures and vocabulary. For the listening and speaking sections, emphasis is placed 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, 1984/5
Vuong, G.T. Vietnamese in a Nutshell. New Jersey, Montclair, 1975

References
Ton-That, Q.-D. Beginner Vietnamese Book 3. Monash University, 1993
In addition videotaped materials and texts selected by the lecturer will be provided

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 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.
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, K.K. *Tu Dien Viet-Anh* (*Vietnamese-English Dictionary*). Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1990
Modern English-Vietnamese Dictionary Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1991
In addition videotaped materials and texts selected by the lecturer will be provided

AV304 *Vietnamese 3B*
No. of hours per week: six hours
Prerequisite: AV204 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 include 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, K.K. *Tu Dien Viet-Anh* (*Vietnamese-English Dictionary*). Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1990
Modern English-Vietnamese Dictionary Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1991
In addition videotaped materials and texts selected by the lecturer will be provided

AV303 *Vietnamese 3A*
No. of hours per week: six hours
Prerequisite: AV204 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 areas directly relevant to the country of Vietnam such as history, geography, trade and tourism.

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

References
Dang, C.L. and Le, K.K. *Tu Dien Viet-Anh* (*Vietnamese-English Dictionary*). Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1990
Modern English-Vietnamese Dictionary Nha Xuat Ban Khoa Hoc xa Hoi Ha Noi, 1991
In addition videotaped materials and texts selected by the lecturer will be provided
AV306  **Reading Vietnamese Newspapers**
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 Melbourne, Swinburne Press, 1994

**References**

**AYIOO  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, ethics in research, biological foundations of behaviour, sensation, perception and consciousness, emotion, 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: AYIOO
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 motivation, genetics, personality, sexuality, stress and coping and psychopathology. The design and analysis of experimental studies forms a major part of the teaching program.

**AY102  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.

**AY103  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/or a tutorial class per week.

**Reference**
Berk, L. Child Development. 3rd edn, Boston, Allyn & Bacon, 1994

* Not available to students who have previously passed AY200 Psychology

**AY104  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 an individual's 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.
AY312  The Psychology of Personality
No. of hours per week: three hours
Prerequisites: AY202, AY203, AY204, SM278
Prerequisite or corequisite: SM378
Assessment: an examination and a research project and report

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
Assessment: class test and practical report

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 subject 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

*AY320  Psychological Foundations of Counselling
Equivalent value of one half-semester subject
No. of hours per week: two hours
Prerequisite: AY312
Assessment: a theoretical examination and a practical interviewing skills project

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
Benjamin, A. The Helping Interview. 4th edn, Boston, Houghton Mifflin, 1987
Thomas, R. Counseling and Lifespan Development. London, Sage, 1990

* Not available to students who have previously passed AY201 Psychology

AY400  Applied Social Psychology
No. of hours per week: one hour (lecture); two hours (seminar)
Assessment: research project 60%, essay 40%

Subject aims and description
This subject has been divided into two broad sections: methodology and areas of application. Methodology will include overviews of survey research, experimental and quasi-experimental design, and evaluation research. The applications of social psychology will be examined. These include educational psychology, forensic psychology and health psychology.

Reference

AY401  Research Design and Analysis
No. of hours per week: one and a half hours (lectures), one and half hours (seminar)
Assessment: practical report 50%, two class exercises 50%

Subject aims and description
This subject reviews research designs and tools which are appropriate for psychological inquiry. The major topics covered include traditional experimental designs, research planning and objectives, questionnaire construction and use. quasi-experimental designs and qualitative methodologies. The theoretical bases of these techniques are studied, and students are encouraged to explore solutions to the problems of conducting psychological research. Development of skills in resolving clinical analysis of different forms of research is emphasised.

References
**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.

**References**

**AY411  Counselling in the Human Services**

No. of hours per week: one hour (lectures), two hours (laboratory)
Assessment: theory essay 50%, video-taped interview and 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
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 manuscript.

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 School of Social and Behavioural Science 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 School of Social and Behavioural Science’s Statement of Research Ethics.

**References**
Swinburne Psychology Department, Graduate Diploma in Applied Psychology Report Requirements. Melbourne. Swinburne Press, 1993
Swinburne Psychology Department. Statement on Research Ethics. Melbourne, Swinburne Press, 1996

**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 subject 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 (seminar/class 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

**AY430 Organisational Psychology**

- **No. of hours per week:** one hour (lectures), two hours (seminar)
- **Assessment:** theory examination 60%, practical assignment 40%

**Subject aims and description**
This subject is concerned with the role of the psychologist within organisations. It aims to familiarise participants with the dynamics of individual interactions and behaviours in work settings. It reviews contemporary theory, research and practice in regard to the psycho-social aspects of interpersonal relationships and roles within organisations. It will examine: perceptions, values and attitudes of individuals; culture, power and influence; communication networks.

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.

Topics include:
- 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.

Topics include:
- The development of counselling and counselling psychology. Major theoretical perspectives; cognitive-behavioural, psychodynamic, experiential, systemic.
- Developments in counsellor education: Carkhuff's IDET/SHRT model; Kagan's PR model; Ivey's microcounselling model; Stone's cognitive behavioural model, the work of Egan. The client-counsellor relationship, goals of helping.
- Developing competence in counselling skills through microcounselling skill-based training.
- Assessment, problem-conceptualisation, selected interventions.
AY513 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 student appreciation of counselling psychology. Students will give brief presentations concerning proposed individual research. Presentations by school staff and visiting researchers and practitioners are made concerning current research in the field. Selected examples of published research are examined, which constitute exemplars of approaches to researching theoretical or practice issues in counselling psychology.

References

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 metatheory, e.g. Erikson, Piaget, Levinson, Bandura and others. The notion of life transitions and their links to the experience of stress and coping. Problems and issues in conceptualising and measuring development and adaptation to life events. Applications of the above theoretical material 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 late adulthood; crises of development such as substance abuse; stress related illness and relationship breakdown.

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.

Topics include:
- 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
- The assessment interview and Psychodiagnostic Systems (e.g. DSM-III-R)
- Cognitive and behavioural assessment; Adaptive Behaviour scales
- Assessing occupational interests and references: The Holland VPI and SDS, the WAPS.
- Assessing abilities: including the use of WISC-R and WAIS-R
- Self-report and projective measures of personality functioning: MMPI-2 Rorschach, TAT
- 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.

Topics include:
- 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, supervisionskils;
- 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, participants 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, their professional skills, their professional interests. A normal caseload will be three 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: case study 30% practical and theoretical examination 70%
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 include the regulation of psychological practice through professional associations and registration boards, the influence of values on ethical practice, limitations on confidentiality, who is the client, report writing, dual role relationships, psychology and the law.

References

AY611 Counselling Psychology B: Psychology of Marriage and the Family
No. of hours per week: three hours
Assessment: seminar presentation 50%, videotaped interview 50%
Subject aims and description
The subject 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;
Topics include:
- 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.
- Experiential exercises will be conducted to demonstrate intervention strategies with couples and families.

References
Nichols, M.P. and Schwartz, R.C. Family Therapy 2nd edn, Boston, Allyn and Bacon, 1991
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 coordinator. 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 School of Social and Behavioural Science 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 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.

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

References
Bishop, G.D., Health Psychology: Integrating Mind and Body, Boston, Allyn and Bacon 1994

Aspects of Professional Practice

No. of hours per week: two hours
Prerequisite or corequisite: 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 practice 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

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 School.
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 publishes 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

BB701 Management 2: (Resources)
Course: MBA
Prerequisites: normally all subjects taught in the first term of the course. This subject is compulsory (conversion students excepted)

Subject aims
The basic objective of this subject 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 subject will be complemented by study of the place of innovation and internationalism. Issues addressed will be seen to draw from, and contribute to, other subjects 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 subject 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 material resources;
- use of financial and non financial indicators
- accounting and management reporting systems.

BB702 Management 3: (Ideas)
Course: MBA
Prerequisites: normally all subjects taught in the first term of the course. This subject is compulsory for all students

Subject aims
The basic objectives of this subject 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 subject will draw on the knowledge gained in other subjects 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.

Textbooks

Reference

BB801 International Business

No. of hours per week: two hours for fifteen weeks
Prerequisites: normally all subjects in the first two terms of the course. This subject is a compulsory part of the MBA for all students
Assessment: assignments, presentations, tests

Subject aims
The purpose of this subject 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. Financing International Trade Risk Management and International Business;
Special problems of international operations from Australia.

Texts or references

BB802 Management 4: (Technology and Management)

Prerequisites: none.
This subject is compulsory for all students

Subject aims
The principal aim of this subject 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
Timmons, JA. New Venture Creation: Entrepreneurship in the 1990's. 3rd edn, Homewood, Irwin, 1990

References
Selected articles and extracts will be prescribed.
As background reading, the following texts are recommended:
Roszk, T. The Cult for Information. New York, Pantheon, 1986

8804 Management 5: (Management and Society)
Prerequisites: none.
This subject is compulsory for all students

Subject aims
This subject focuses on the international, national and community context in which planning and decision making must take place.
The subject 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 subject will draw on the experience of participants to examine the values implicitly 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 implicitly 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.

8809 Strategic Project — Master of Business Administration
Please contact course provider for details.

8C110 Accounting 1
No. of hours per week: three hours
Prerequisite: nil
Assessment: examination/mid semester assessment

Subject aims and descriptions
A basic introduction to accounting concepts, financial accounting, management accounting and finance.
Accounting theory and practice are examined in an historical cost accounting system. This subject includes the following topics: an introduction to accounting and financial statements; revenue and expenses; cost classification; cost, value, profit analysis; planning and evaluating merchandising activities; interpersonal evaluation; working capital management; capital structure and leverage; cash flow statements.

Textbooks
Student Manual. Swinburne, 1992

References
Barton, A.D. The Anatomy of Accounting. 4th edn, St. Lucia, University of Queensland Press, 1990

BC220 Accounting 2
No. of hours per week: three hours
Prerequisite: BC110 Accounting 1 or B513 Accounting
Instruction: lecture/tutorial
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 are 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 rev. edn, Brisbane, John Wiley and Sons, 1992

BC221 Corporate Accounting
No. of hours per week: three hours
Prerequisite: BC220 Accounting 2
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims
The overall objective of the subject 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 subject 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, 5th edn, Accounting/Auditing Statements 1995: ASOPA or ICAA. BC221 Corporate Accounting Student Manual, Swinburne, 1993
Leo, K.J. and Hoggett, J.R. Company Accounting in Australia. 3rd edn, Brisbane, Wiley, 1993

References
Cliff, R.C. Corporate Accounting. 4th edn, New York, Prentice Hall, 1993

BC222 Management Accounting 1
No. of hours per week: three hours
Prerequisite: BC110 Accounting 1
Instruction: lecture/tutorial
Assessment: major computer based spreadsheet 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 subject 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 practice against the contemporary literature on activity-based costing and the new technologies.

Textbook
Hansen, D.R. and Mower, M.M. Management Accounting. 3rd edn, Cincinnati, Ohio, South Western, 1994

References
Shillinglaw, G., Managerial Cost Accounting. 5th edn, Homewood, Illinois, Irwin, 1982

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 subject 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. 3rd edn, Cincinnati, South-Western, Ohio, 1994

Reference

BC224 Financial Management 1
No. of hours per week: three hours
Prerequisites: completion of all core subjects, and BC220 Accounting 2
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims
The objectives of this subject 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.

Textbook

References

BC225 Auditing
No. of hours per week: three hours
Prerequisite: students enrolled in this subject 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 subject 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.

Textbook
Gill, G.S. and Cosserat, G.W., Modern Auditing in Australia. 3rd edn, Brisbane, Wiley, 1993

References
Gill, G.S. and Cosserat, G.W., Modern Auditing in Australia. 3rd edn, Brisbane, Wiley, 1993

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

BC330 Accounting Theory
No. of hours per week: three hours
Prerequisite: All second year subjects required for professional accounting recognition
Instruction: lecture/tutorial
Assessment: examination/essay/tutorial performance/credit test

Subject aims and description
The objectives of this subject are:

- to examine the development of theory 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 subject to study specific issues in financial accounting including the development of accounting standards, agency theory, current cost accounting ethics and accounting for income tax, intangibles, mining and foreign currency translation.

Although the subject is concerned with theory, considerable use is made of practical problems in parts of the course, to illustrate the application of theory.
**BC331 Taxation**

No. of hours per week: three hours  
Prerequisite: students enrolled in this subject are expected to have passed BC221 Corporate Accounting  
Instruction: lecture/tutorial  
Assessment: examination/assignments

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 BC336 Advanced Taxation.

Topics covered include: the nature of assessable income, specific income types, source residency and derivation, eligible termination payments, capital gains tax, fringe benefits tax, allowable deductions and the provisions relating to companies, partnerships, and individuals.

**Textbooks**  

**References**  

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**BC332 Strategic Cost Management**

No. of hours per week: three hours  
Prerequisite: students enrolled for this subject will be expected to have passed BC222 Management Accounting 1 and BC223 Management Accounting 2  
Instruction: classes  
Assessment: to be advised

Subject aims  
This is a final year subject 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 subject 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 worlds best practice in a global market place provide the context for a critical evaluation of management accounting responses to these challenges.

**References**  
Shank, J.K. and Govindarajan, V. *Strategic Cost Analysis*. Hornewood, Ill., Irwin, 1989  
Ward, K. *Strategic Management Accounting*. Butterworth, Heinemann, 1992  
Current journals, especially *Journal of Cost Management and NAA Management Accounting*

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**BC333 EDP Auditing**

No. of hours per week: three hours  
Prerequisite: students enrolled in this subject will be expected to have passed BC225 Auditing  
Instruction: classes  
Assessment: examination/assignment

Subject aims and description  
This subject presumes familiarity with the subject matter of 85225 Auditing. It should be most useful for those students planning to enter the profession.

The objective of the subject 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**
Current journals and articles

**BC334 Financial Accounting**
No. of hours per week: three hours
Prerequisites: BC221 Corporate Accounting and BC330 Accounting Theory
Instruction: classes
Assessment: examination/assignment

This subject 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; accounting and ethics; international accounting standards; and regulation; and contemporary financial accounting issues.

The syllabus is flexible to allow new financial accounting issues which emerge to replace topics of less relevance.

**References**
Various current Exposure Drafts and Standards issued by the Australian Accounting Research Foundation and the Australian Accounting Standards Board

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.

**BC336 Advanced Taxation**
No. of hours per week: three hours
Prerequisite: BC331 Taxation
Instruction: lecture/tutorial
Assessment: examination/assignment

**Subject aims and description**
This is a final year subject designed for students who require additional experience of taxation issues. The objective of the subject is to acquaint students with the areas of taxation of practical utility by concentrating on the taxation implications of various taxable entities, in particular, companies, unincorporated entities, trusts, superannuation funds and primary producers. In addition the subject 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 subject 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 Federal Tax Reporter. Vols. 1-9, North Ryde, CCH Australia Ltd.
Australian Tax Cases. North Ryde: CCH Australia Ltd.
Australian Master Tax Guide. North Ryde, CCH Australia Ltd. 1994
Income Tax Assessment Act (1936 as amended)
Lehman, G. and Coleman, G. Taxation Law in Australia. 3rd edn, Sydney, Butterworths, 1994
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 subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering School.

Students must submit their proposal to the Accounting 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.

Advanced Accounting
This subject 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.

BC401  Accounting for Management

The objectives of the subject 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 subject 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 the appropriate uses and limitations of information produced by the accounting system.

Subject aims
No prior knowledge of accounting is assumed.
Topics include:
- general purpose financial statements
- financial statement analysis
  - cash flow statements
- business finance and investment decision analysis
  - cost — volume — profit analysis
- costing products and services
- segment performance evaluation
- budgeting and profit planning

Textbook

References

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 20%, assignments 40%, examination 40%

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 subject 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.


**Subject description**
A selection of topics including the scheme of the income tax assessment act, assessable income, statutory inclusions and exclusions in income, source derivation and residency, allowable and specific deductions.

**References**
Australian Master Tax Guide, North Ryde, N.S.W., CCH Australia Ltd.  
Australian Income Tax Assessment Act 1936, CCH Australia Ltd.  
Australian Federal Tax Reporter, North Ryde, N.S.W., CCH Australia Ltd.  
Borkoczy, S., Australian Tax Casebook, North Ryde, N.S.W., CCH Australia Ltd., 1993

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**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 20%, assignments 40%, examination 40%

**Subject aims**  
The objective of the subject 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 subject will look at the issues involved in tax planning and current developments in taxation.

**References**
Australian Master Tax Guide, North Ryde, N.S.W., CCH Australia Ltd.  
Australian Income Tax Assessment Act 1936, North Ryde, N.S.W., CCH Australia Ltd.  
Lehmann, G. and Coleman, C., Taxation Law in Australia, 3rd edn, Sydney, Butterworths, 1994

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**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 40%, assignments 60%

**Subject aims**
The objectives of this subject 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 will be covered 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**
Bruce, R., McKern, B., Pollard, I. and Skully, M., Handbook of Australian Corporate Finance, 5th edn, Sydney, Butterworths, 1995  

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**BC413 Investment Analysis**

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 30%, assignments 70%

**Subject aims**
The broad objective of this subject 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 subject 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 will be covered 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**
Bruce, R., McKern, B., Pollard, I. and Skully, M., Handbook of Australian Corporate Finance, 5th edn, Sydney, Butterworths, 1994  
BC503  Introduction to Financial Management

No. of hours per week: two hours  
Prerequisite: nil  
Assessment: assignment(s) and examination

A first-year subject in the graduate diploma course in business administration

Subject aims
The objectives of the subject 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 subject.

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;

References

BC504  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

BC505  Corporate Financial Management 2

Prerequisite: students enrolled in this subject are expected to have passed BC504 Corporate Financial Management 1

Subject aims
This subject is designed to develop an understanding of the way in which firms plan and manage their financing and investment strategies.

Subject description
Strategic planning — commitment of resources to profitable activities. Fund flow analysis; cash flow analysis — testing for cash inadequacy, cash insolvency.
Financing techniques, managing liabilities.
Control of short-term assets.
Prediction of financial distress and corporate failure.
Analysis of take-overs and mergers.
Determination and evaluation of the firm’s financing and investment strategies, e.g. financial mobility, leasing, project financing, divestments.

References
Shapiro, A.C. Modern Corporate Finance. New York, Macmillan, 1990

BC604  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
Higgins, R.C. Analysis for Financial Management. 3rd edn, Homewood, Ill., Irwin, 1992

References
Bruce, R., McKern, B, Pollard, I. and Skully, M. Handbook of Australian Corporate Finance. 5th edn, Sydney, Butterworths, 1994
**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 edn, St. Lucia, Qld., Univ. of Qld., 1989
Jacob, N.L. and Pettit, R.R. Investments. Homewood, Ill., Irwin, 1984

**BC606 Current Developments in Corporate Finance**

**Subject aims**
The subject 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 subject.

**Subject description**
The subject is conducted on a seminar basis with ample opportunity given for interaction with the visiting speakers. Because of the nature of the subject 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 subject and assumes that students have completed all compulsory subjects.
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.

**BC701 Accounting for Management**

Course: MBA
Prerequisites: none.
This subject is compulsory.

**Subject aims**
The aim of this subject 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 subject 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 subjects 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 the 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**


**BE110 Microeconomics**

No. of hours per week: three hours
Prerequisite: nil
Instruction: lecturertutorial
Assessment: examination/assignment

**Subject aims**

To introduce key microeconomic concepts and to encourage and assist students to apply economic reasoning to issues facing business, government and consumers.

**Subject description**

This subject introduces students to microeconomic concepts and their application within the framework of the Australian economy. The course commences with an examination of the role of the market 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 structures. The significance of microeconomic concepts for both business and government policy is emphasised throughout.

**Textbooks**

Waud, R.N. et al., Economics, 2nd Australian edn, Armston, N.S.W., Harper Educational, 1992

**References**


**BE220 Macroeconomics**

No. of hours per week: three hours
Prerequisite: BE110 Microeconomics
Instruction: lecturertutorial
Assessment: examination/assignment, multiple choice tests

**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 subject 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**


**References**

McTaggart, D. et al. Microeconomics, Australian edn, Sydney, Addison-Wesley, 1992
Waud, R.N. et al., Economics, 2nd Australian edn, Armston, N.S.W., Harper Educational, 1992
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 subject builds on the material covered in Economics 1A. Students who are contemplating major studies in economics should include this subject and BE221 Managerial Economic Analysis in their courses.

The subject 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 subject 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 subject 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 subject 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 subject, however, the following references will provide useful preliminary reading:

**References**  

BE224 **Economic Evaluation**  
No. of hours per week: three hours  
Prerequisite: BE110 Microeconomics  
Instruction: classes  
Assessment: examination/assignment

**Subject aims and description**  
This subject 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 subject 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**  
Hollick, M. *An Introduction to Project Evaluation*. Melbourne, Longman Cheshire, 1993

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 Macroeconomics  
Instruction: one class  
Assessment: examination/assignment

**Subject aims and description**  
This is a second year subject which builds on the material covered in BE220, the first year macro subject. The focus of the subject is macroeconomic policy in a more applied sense.

The main objectives of the subject 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, macroeconomic 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 subject 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 importance of property rights; the environmental impact of poverty and economic growth; the need for sustainable development; the population problem; the management of depletable and renewable natural resources; and the economics of pollution control.

Textbook

References

BE331  Public Finance

No. of hours per week: three hours
Prerequisite: BE110 Microeconomics
Instruction: classes
Assessment: examination/assignment

Subject aims and description
This subject involves an analysis of the economic rationale of government expenditure and revenue raising.

It 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 factors 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

BE332  Economic Research

No. of hours per week: three hours
Prerequisites: BE110 Microeconomics and BE220 Macroeconomics
Instruction: classes
Assessment: examination/assignment

Subject aims and description
The intention in this subject 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 subject 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 subject.

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.

Subject description
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
Bruce, R. Handbook of Australian Corporate Finance. 4th edn, Sydney, Butterworths, 1991
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
- 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
- Australia's trade environment
- Globalisation of world trade
- Strategic trade policy and Australian competitiveness
- Australia in the East Asian region

**References**


**BE335 International Finance**

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**

The intention in this subject 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 include:
- 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**

Because of the contemporary nature of the subject no textbook is set. Comprehensive reference lists will be provided

**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 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 subject 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 subject will consider, *inter alia*, argument for and against reliance on the user pays principle.

In general, the subject 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 subject no textbook is set. Comprehensive reference lists will be provided

**BE337 Economic Development**

This subject will not be offered in 1995.

**BE338 Comparative Labour Relations**

This subject will not be offered in 1995.

**BE339 Comparative Economic Systems**

This subject will not be offered in 1995.
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-disciplinary approach, students may, subject to approval, undertake selected honours-level coursework subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering school.

Students must submit their proposal to the Economics 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.

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.

Economics for Business

No. of hours per week: two and a quarter hours
Prerequisites: nil
Instruction: class
Assessment: essay/exam

A major subject 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 subject 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.

Economics

No prior knowledge of economics is assumed. Applicants who have recently majored in economics at a tertiary level are advised to enrol for another postgraduate diploma subject.

The first half of the course is concerned with industry economics, covering in particular market structure, conduct and performance issues.

The second half of the course introduces students to key macroeconomic concepts, current issues and policies. It is applied in nature and reference is made to current economic events as discussed in the mass media.

Topics covered by the course are drawn from: markets, resource allocation and efficiency; production and costs; pricing and profit; industry economics including public policy aspects; economic indicators and economic cycles; aggregate demand and supply analysis; unemployment; inflation; international economic constraints; financial markets and government macroeconomic policies.

Textbook


References

A detailed reading guide will be issued at the start of the semester.

Financial Instruments and Markets (Graduate Diploma in Corporate Finance)

No. of hours per week: two hours
Prerequisite: nil
Instruction: lecture/discussions
Assessment: essay/exams/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

BE504 The Nature and Characteristics of Markets

No. of hours per week: two hours
Prerequisites: nil
Instruction: classes
Assessment: assignments 50%, final examination 50%

Recognition of prior learning
Credit will be given for a comparable subject successfully completed at the graduate level.

Subject aims
This subject 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:
Waud, R. and Hocking, A. Microeconomics. 2nd Australian edn, Sydney, Harper Educational, 1992

BE603 International Finance and Monetary Theory

Prerequisite: BE503 Financial Instruments 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

BE701 Economics for Management

Course: MBA
Prerequisites: nil.
This subject is compulsory.

Subject aims
The basic objective of this subject 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
- 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**
- Drake, P.J. and Nieuwenhuysen, J.P. Economic Growth for Australia, Melbourne, Oxford University Press, 1988
- Economic Roundup, The Treasury, Selected Publications, The Economist

**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 subject are:
- to enable students to gain an understanding of the issues facing managers in organisations and the context in which they operate;
- 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.

Opportunities are also provided to help the student develop research skills through independent inquiry; and to appreciate the value of independent study as well as the value of learning to be an effective group member.

**Textbooks**
To be advised

**References**
As advised in lectures and tutorials

**BH220 Organisational Behaviour 1**
No. of hours per week: three hours
Prerequisite: BH110 Organisations and Management
Instruction: classes
Assessment: assignments/presentations

**Subject aims and description**
The major aim of the subject 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. Students will be asked to systematically develop competencies in working in group situations. 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**

**References**

**BH221 Human Resource Management 1**
No. of hours per week: three hours
Prerequisite: BH110 Organisations and Management
Instruction: classes
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 subject is on the understanding and management of those resources through the application of appropriate techniques, functions and management approaches.

The subject 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 subject 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**

**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 subject 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 subject covers five main areas of study:
- 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.

**References**
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

**BH332 Enterprise Bargaining**
No. of hours per week: three hours
Prerequisites: at least two Stage 2 Organisation Behaviour subjects, with BE222 Industrial Relations strongly recommended as an additional subject
Instruction: classes
Assessment: individual and group assignments

Subject aims and description
This subject is an exploration of the emerging practice of enterprise bargaining in Australia.

The subject 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 subject.

**BH333 Managing Quality in Organisations**
No. of hours per week: three hours
Prerequisites: at least three Stage 2 OB/HRM subjects
Instruction: classes
Assessment: individual and group assignments and projects

Subject aims and description
This subject is a 'capstone' subject 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 increasingly need to attend to delivering quality outcomes, this subject 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 subjects completed.
This subject 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 1994/95 the countries visited will be Korea and Thailand. Other countries may be included.
Assessment: to be advised

Subject aims and description
The objective of this subject 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 subject entails students attending lectures at Swinburne University and travelling to a selected Asian country for a period of approximately three 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 subject, 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 subject 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-disciplinary approach, students may, subject to approval, undertake selected honours-level coursework subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering school.
Students must submit their proposal to the Organisation Behaviour 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.

**Advanced Studies in Organisation Behaviour**
Students will undertake one or more coursework subjects, supervised reading subjects or other course of study, which will assist them in carrying out their organisation behaviour research project. It is envisaged that many coursework subjects 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.

**BH403 Managing People and Organisations**
A major subject 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: classes
Assessment: individual and group assignments and presentations

**Subject aims and description**
An introductory subject to the social psychology of organisations and to help participants understand and develop a repertoire of 'frames' for analysis and problem solving about how we organise.

**Objectives**
- 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.
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 cooperative 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 I

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 subject in the postgraduate diplomas of business administration and management systems. No prior knowledge of organisational behaviour is required but students will be expected to have considerable experience of working in organisations.

Subject description
This subject complements BH608 Organisational Psychology II which is taken in the second year. The overall theme of the subject is the ‘learning organisation’ which serves to connect and integrate them. It is intended that they be viewed as a developing whole.

CP I focuses on individual and group processes in the context of organisational dynamics. The class itself will be a learning organisation within the context of the GDBA system.

Assessment will involve action learning projects about team dynamics and a work-based concern. Theory will be applied to practice.

Sub-themes of leadership, managing, changing and ethics will be continually explored.

Textbook

References
Bolman, L and Deal, T. Modern Approaches to Understanding and Managing Organisations. San Francisco, Calif., Jossey Bass, 1984

BH604 Management, Organisation and People

Subject aims and description
This subject 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. Wherever possible, learning is applied to the business and management systems 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 nature of the organisation; the organisation as an open system; interactions between sub-systems 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

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 subject is tightly sequenced with the following subject BH607 Leadership and Change in Organisations.
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

BH507 Organisational Psychology II
Prerequisite: BH507 Organisational Psychology I.

A second year subject in the postgraduate diplomas of business administration.

Subject aims and description
This subject complements BH507 Organisational Psychology I which is taken in the first year. The overall theme of the subjects is the 'learning organisation' which serves to connect and integrate them. It is intended that they be viewed as a developing whole.

OP II emphasises organisation theory, dynamics and images in which group processes are embedded. The class itself will be a learning organisation within the context of the GDBA system.

Assessment will involve action learning projects relevant to the workplace. Theory will be applied to practice. The subject will recognise the systemic interdependence of organisational dynamics with BM603 Business Policy.

Sub-themes of leadership, managing, changing and ethics will be continually explored.

Textbooks and References

BH706 Management 1: (People and Organisations)

Course: MBA
Prerequisites: none.
This subject is compulsory

As part of the subject, all candidates must successfully complete an introductory four day residential seminar 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 subject 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 subject 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.

Subject description
The subject 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.
BH707 Strategic Change

Prerequisites: Completion of the Graduate Diploma in Management Systems or equivalent. BH604 Management, Organisations and People or equivalent; BM602 Strategic Management or equivalent

Subject aims
To build upon the knowledge and skills developed in the earlier years of the course, and to develop ways of understanding factors to implement change within an organisation, to raise awareness of the need to manage the complexities and consequences of various processes of managing them. To examine the role of the systems manager as a change agent and when it is appropriate to use external consultants/facilitators. Particular emphasis will be given to the management of specific organisation changes such as the introduction of office automation or the impact of financial deregulation, as well as to their human, technological and structural consequences.

Subject description
Topics will include:
- Coping with a changing environment, resource and environment analysis; strategic planning; concepts of managing change; an overview of organisation development; managers as change agents; the role of consultants/facilitators; the information collection phase; the diganostic phase: from symptom to underlying cause; implementation of change strategies: planning, strategic and operational; team building and development; development of systems project teams; intergroup techniques for addressing inter-departmental conflicts; the relationship with users; stabilisation of change.

Textbooks
Smith, K.K. Groups in Conflict: Prisons in Disguise. Dubuque, Iowa, Kendall/Hunt, 1982

BH708 Processes of Inquiry and Research Organisation Behaviour, Part 1
(Intercultural Understanding)

Prerequisites: nil
Assessment: essay 50% and research project 50%
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 Organisation 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 Organisation 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

Prerequisites: nil
Assessment: 1 report on an organisational role analysis (managing oneself in role)

**Subject aims**
To explore and understand the process, risks and judgements required in finding, making and taking an organisational role.

**Subject disciplines**
Qualitative and "clinical" research methods will be explored in researching the management of oneself in a role as students draw on their own organisational role analysis.

**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 subject 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 subject 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**
Holland, P. and Wilson, S. Legal Environment of Business. Swinburne Press current edition

**References**
Latimer, J. Australian Business Law (13th edn), North Ryde, N.S.W., CCH Australia, 1993

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 subject 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**
Khoury, D. and Yamouni, Y.S., Understanding Contract Law 3rd edn, Sydney, Butterworths, 1992

**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 subject 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**
Lipton, J. and Herzberg, A. Understanding Company Law 5th edn, Sydney, Law Book Co, 1993

**References**
Law of Companies in Australia. 2nd edn, North Ryde, CCH, 1986
Guidebook to Australian Company Law 10th edn, 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 subject 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.

Textbook

References
Healey, D. and Terry, A. Misleading or Deceptive Conduct. North Ryde, CCH Australia Ltd., 1991
Livermore, J. and Clark, E., Marketing Law Sydney, Law Book Co., 1993
Goods Act 1958 (Vic)
Goods (Sales and Leases) Act 1981 (Vic)
Consumer Affairs Act 1972 (Vic)
Fair Trading Act 1985 (Vic)
Trade Practices Act 1974 (Commonwealth)

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 subject 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 subject 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
Clark, B. and Kapnoullas, S. Retailing and the Law 1994

References
Retailing and the Law Papers presented by the Continuing Legal Education Dept. of the College of Law. May 1986, Sydney, Centre for Legal Information and Publications. 1986
Goods Act 1958 (Vic)
Consumer Affairs Act 1972 (Vic)
Fair Trading Act 1985 (Vic)
Trade Practices Act 1974 (Cth.)

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 subject 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

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 subject 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
Heilbronn, G.N. Travel and Tourism Law in Australia and New Zealand, Sydney, Federation Press, 1992
Ryan, K.W. International Law in Australia. 2nd edn, Sydney, Law Book Co., 1984
Travel Agents Act 1986 (Vic.)
BL330  **Advanced Company Law**
No. of hours per week: three hours
Prerequisite: students enrolled in this subject are expected to have passed **BL221 Company Law**
Instruction: one class
Assessment: to be advised

Subject aims and description
The subject is designed to acquaint students with various contemporary issues in company law, especially relevant to a future public practice in accounting. The course examines current topics in such areas as the constitutional and jurisdictional framework of company law, company direction and management, company conflict and company misfeasance. In recent years the course has focused substantially on company insolvency.

Textbook
CCH Australia Ltd. Australian Corporations & Securities Legislation. (Latest edn), Sydney, CCH Australia Ltd., 1994

References
Lipton, P. and **Herzberg**, A.  *Understanding Company Law* 5th edn, North Ryde, N.S.W., Law Book Co., 1993
Detailed references to journal articles will be given to students

BL331  **International Business Law**
No. of hours per week: three hours
Prerequisite: students enrolled in this subject 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 subject is to consider the legal aspects of international business law.

The emphasis of the subject 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

BL332  **Employment Law**
No. of hours per week: three hours
Prerequisite: **BL110 Legal Environment of Business**
Instruction: classes
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 subject:
- 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;
- industrial conflict — penal powers under the arbitration system, deregistration, common law liability for industrial action, statutory liability for industrial action;
- the Victorian Employee Relations Act.

References

BL333  **Finance Law**
No. of hours per week: three hours
Prerequisite: students enrolled in this subject will be expected to have passed **BL220 Contract Law**
Instruction: classes
Assessment: to be advised

Subject aims and description
The object of this subject 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 subject 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, particular the cultural and historical context.
The subject will examine the interrelationship between law, business and society in selected Asian countries. It will explore the way the law has been used 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 Indonesia, Malaysia and Korea.

References

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-disciplinary approach, students may, subject to approval, undertake selected honours-level coursework subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering School.

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 Business Law
Students will undertake a program of advanced study designed to support their research project proposal. This will involve the application of legal reasoning and legal techniques to issues which are of importance to business, government and society. The program will consist of supervised readings and seminars.

Business Law Honours Research Project
Each student will be required to undertake an individual program of advanced study in one or more areas of business law in his or her preferred area of specialisation. Potential areas of research should reflect expertise within the School which includes law relating to contracts, companies, marketing, retailing, employment, tourism, international marketing, finance, computers, Asian business law and European business law. Students will be required to make presentations at progressive stages of their research. The research project will be presented in the form of a written dissertation of approximately 15,000 words in length.

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: lectures/tutorial
Assessment: examination, assignments, presentation, class exercise

Subject aims and description
This subject 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 subject 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 non-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 subject, 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
McCarthy, E.J. and Perreault, W.D., Jr., Basic Marketing, A Managerial Approach, 10th edn, Homewood, Irwin, 1990
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 **subject** 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 subject 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 subject is to study the process of choice in both consumer and business-to-business purchasing contexts, along with its determinants and its implications for marketing strategy. At the completion of the subject, students should have acquired an understanding of:  
- the process of human decision making;  
- The three main influences on consumer choice:  
  - the individual consumer  
  - environmental influence  
  - market strategy  
- the main influences impacting on business-to-business purchasing decisions  
- the DMU (Decision Making Unit) or buying centre  
- organisational factors and constraints  

**Specific aims**  
- to allow second-stage students to explore basic human behaviour concepts and theories, as they relate to purchasing decisions in both consumer and business-to-business marketing areas  
- to emphasise the practical marketing implications of these behavioural concepts, by the study of:  
  - consumers as individuals and in groups  
  - decision-making processes (consumer and organisational)  
  - communication across groups  
  - communication and promotion forms  
- to provide base behavioural knowledge levels, which allow further development of marketing knowledge in later stage subjects.  

**Textbook**  
To be advised.

BM221  **Marketing Research**  
No. of hours per week: three hours  
Prerequisites: BM110  
The Marketing Concept, BM220 Market Behaviour and BS221 Marketing Data Management or equivalent subjects  

**Subject aims and description**  
This subject introduces the *theory* and practice of research in a marketing environment. Students will be instructed in using appropriate research methods and techniques to provide information for marketing decision-making. The importance of research to strategic and tactical problems will be emphasised.  

Topics to be covered are: the importance of research to marketing; defining the marketing research problem; specifying research objectives; determining the research design; information sources; qualitative research; quantitative data collection methods; measurement and scaling procedures; sample designs; field work and data collection; data analysis; result presentation.  

**Textbook**  
Details will be provided at the first lecture.

BM222  **Marketing Planning**  
No. of hours per week: three hours  
Corequisite: BM110  
The Marketing Concept  
Instruction: lecture/tutorial  
Assessment: examination/assignments  

Marketing Planning is a mandatory subject in the economics-marketing, and marketing streams and an elective subject in the accounting and computing streams.  

**Subject aims and description**  
The objective of this subject is to examine the concepts of planning and strategy in marketing, the role and methods of strategic analysis, as well as issues related to strategy formulation, implementation and control. It focuses on the marketing planning process as a key tool in an organisation's interaction with its environment.  

In the highly competitive, volatile and turbulent business world of the mid-90s it is particularly important for Australian companies to carefully analyse their strategic planning, sharpen their business analysis skills and see beyond the geographical or product-based boundaries of the markets in which they currently compete. Acquiring and maintaining competitive advantage by having a consistently superior business/marketing planning system will be one of the most vital strengths of successful businesses of the future. This subject gives students the opportunity to acquire a working understanding of various methods of marketing planning and the ability to apply them appropriately in developing and implementing marketing strategies that respond to the challenges of 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 students a working understanding of the methods and concepts of strategy analysis and how these can be applied in practice;  
- to expose 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**  
A case study 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.
Product Management

No. of hours per week: three hours
Prerequisites: BM221 Marketing Research and BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: by assignment and test

Product Management is a third year subject 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 subject is to enable students to apply their marketing knowledge to the specific area of product management. Within this broad subject area, there are a number of specific objectives. These specific objectives address the subject 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: BM221 Marketing Research and BM222 Marketing Planning
Instruction: lecture/tutorial
Assessment: examination/assignments, case study work

Subject aims and description

The services business is the fastest growing sector nationally as well as globally. This subject 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 and implement marketing strategies in service businesses.

Framework

- distinctive aspects of service marketing
- market research in services environment
- communication and services
- demand management
- service quality
- managing service culture
- implementing the service strategy
- investigating a service industry of your choice (e.g. financial services, hospital services, insurance industry, catering services, etc.)

References


BM332 International Marketing

No. of hours per week: three hours
Prerequisite: BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims

The purpose of the subject is threefold. Firstly, to bring the students to a new awareness of the need to globalise the Australian economy by increasing its international competitiveness. Secondly, to expose the students to the special features of a global competitive environment and to examine the key success factors for Australian companies in the international arena. Thirdly, to introduce students to the fundamentals of the international marketing task.
Specific aims
- to examine the Australian global competitiveness in the 1990s with the aim of helping students to understand the reasons and consequences of globalisation for the Australian economy in general, and Australian companies in particular
- to examine the international strategic diamond and the key success factors of international involvement
- to examine the major elements in an international environment using the PEST (political, economic, socio-cultural and technological) framework, and to incorporate the analysis in the international marketing planning process
- to examine the EPRG schema (ethnocentric, polycentric, regiocentric, geocentric) in the formulation of international marketing strategies

Textbook
Cateora, P.R. International Marketing, 8th edn, Homewood, Ill, Irwin, 1993

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 subject 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 subject 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

BM336 European Business Studies
No. of hours per week: three hours
Prerequisite: BM222 Marketing Strategy
Instruction: lecture/tutorial
Assessment: examination/assignments

This is a third year marketing elective subject.

Subject aims
The objective of this subject 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

BM338 Asian Pacific Business Practice
No. of hours per week: three hours
Assessment: three assignments, class participation

Asian Pacific Business is a third year subject in the Bachelor of Business.

Subject aims
To equip the students with an understanding of the current economic development in the major Asian Pacific nations (ASEAN-6, NIEs-3, China, Australia, New Zealand, Canada, Japan and the United States) and the growing business opportunities and linkages in this region.

Specific aims
- to give the students an understanding of the current states of economic development in the major Asian Pacific economies;
- to understand the uncontrollable factors (political-legal, economic, socio-cultural, and technological) affecting business in the major market groups in the Asian Pacific;
- to study the emergence of a fourth economic driving force, namely the overseas Chinese entrepreneurs, in the Asian Pacific and its implications for Australia;
- to study the emergence of a 'Greater Chinese Economic Zone' (China, Hong Kong and Taiwan) and its potential effects on the region;
- to study the dominance of Japan and its effects on the Asian Pacific economy;
- to learn about business practices (etiquette, negotiation style, Confucianism, family business groups) prevailing in Asia-Pacific.
Textbooks

Preliminary reading


Course reading
Department of Foreign Affairs and Trade, Australia's Business in Asia: Climbing the Mountains. Melbourne, Business Council of Australia, 1992

References
Australia's Bilateral Trade and International Investment. Canberra, Department of Foreign Affairs and Trade, 1992

BM339 Marketing Channel Management

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 subject in the marketing stream of the Bachelor of Business.

Subject aims
The subject aims to provide an overview of retailing from a management perspective by providing a range of specialist skills not covered in other subjects 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

Students must submit their proposal to the Marketing 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.

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 marketing, 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.

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
This subject covers the same body of knowledge as the subject BM501 Marketing Management 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
Consumer behaviour — the buying process; market segmentation. Product 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
Details will be provided at the first session

Reference

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 as well as group assignments

A second year subject in the Graduate Diploma in Business Administration.

Subject aims and description
This subject 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 overall objective of the subject is to give the candidates a practical understanding of the principles and process of marketing planning, including the formulation of marketing strategy and the implementation of action programs. This is to be achieved at two levels: firstly, for a company operating within a dynamic domestic market; and secondly, for a company engaging in, or contemplating involvement in the international marketing environment.

Specific aims
Domestic Marketing
• to introduce candidates to the principles and process of marketing planning within a competitive domestic environment;
• to align the marketing objectives to the corporate mission;
• to equip candidates with the ability to utilise primary and secondary data in marketing planning;
• to examine a selection of techniques (eg. the product-market matrix, the BCG, etc) for marketing strategy formulation;
• to investigate the pitfalls of marketing planning practices.

International Marketing
• to introduce candidates to the principles and process of marketing planning in a dynamic global environment;
• to examine the role of the Australian economy within the global context;
• to examine the macroeconomic factors (political-legal, economic, socio-cultural, and technological) which affect marketing planning in a foreign marketing environment;
• to examine the different strategic options for marketing strategies in the foreign operations;
• to investigate the pitfalls of international marketing planning.

Textbooks

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 subject 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
References

BM603  Business Policy
Prerequisites: because of the nature of this subject, Business Policy is taken in the final semester of the MBA course. Candidates must have completed all of Group A subjects and two of the Group B subjects before commencing this.

Subject aims
This subject 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 subjects will thus be utilised.

Specific objectives of this subject 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.

Subject description
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 a 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.

BM606  Marketing Research Methods
No. of hours per week: two hours
Prerequisites: BQ500 Research Methodology, BM501 Marketing Management 1 or equivalent subjects

Subject aims and description
This subject introduces the theory and practice of research in a marketing environment. Students will be instructed in using appropriate research methods and techniques to provide information for marketing decision-making. The importance of research to strategic and tactical problems will be emphasised.

Topics to be covered are: the importance of research to marketing; the research brief and proposal; defining the marketing research problem; specifying research objectives; determining the research design; information sources; qualitative research; quantitative data collection methods; measurement and scaling procedures; sample designs; field work and data collection; data analysis; report preparation and result presentation.

Textbook
Details will be provided at the first lecture.

BM701  Marketing for Management
Prerequisites: normally Management 1; Economics for Management; Accounting for Management; Computing for Management. This subject is compulsory (conversion students excepted)

Subject aims
The principal objectives of this subject are to provide a strategic orientation to the study of marketing management and to ensure that candidates obtain a firm foundation in marketing concepts.

Specific objectives include:
- to examine the development of marketing strategies at the product (middle management) level which is concerned with developing and implementing marketing plans in regard to positioning, product policy, pricing, promoting and distributing the product, commissioning and undertaking research;
- to examine the development of marketing strategies at the corporate (top management) level which is concerned with the more general concerns of corporate growth and the firm's overall product mix as included in the strategic marketing planning process.
to develop marketing plans to exploit opportunities and deal with the threats before they arise;

to examine the development of international marketing strategies; to evaluate the pros and cons of customerisation 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. 9th edn, Homewood, Ill., Irwin, 1993


**BM801 Business Planning**

Prerequisites: normally all subjects in the first three terms of the course.

This subject is compulsory (conversion students excepted)

**Subject aims**

This subject 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 subjects will thus be utilised.

Specific objectives of this subject 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.

**Subject description**

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 the business plan.

**Texts or references**


**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 B consisting of three hours per week for one semester. Students with the appropriate Year 12 mathematics, or its equivalent, must take the subject 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 BQ11 is the same as the combined content of BQ110E + BQ110, but the time allocation differs. The primary purpose of this subject 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 subject 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 Division. The subject has distinct business modelling emphasis and is applied in nature with interpretation and presentation forming an integral part of the subject.

Topics covered will normally include the following:
- language and notation;
- linear functions and regression;
- presentation of statistical data;
- measures of central tendency and dispersion;
- probability theory and probability distributions;
- sampling theory and design;
- hypothesis testing;
- statistical inference including estimation and confidence intervals;
- index numbers;
- time series analysis including correlation and regression;
- introduction to the mathematics of finance.

Textbook
Comprehensive student notes and references will be made available.

BQ220 Business Forecasting
No. of hours per week: three hours
Prerequisites: BQ110E, BQ110 or BQ111
Quantitative Analysis
Instruction: lecture/tutorial
Assessment: individual and syndicate assignments

Subject aims and description
This subject will provide students with an exposure to the first of many vital business modelling tools. The subject 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 subject, students will be competent users of the main forecasting techniques. The approach taken in this subject is a practical one and therefore considerable use will be made of PC-based business modelling software packages.

Textbooks

References

BQ221 Marketing Data Management
No. of hours per week: three hours
Prerequisites: BQ111 Quantitative Analysis B or (BQ111E + BQ110) Quantitative Analysis A
Instruction: lecture/tutorial
Assessment: maintenance of laboratory logbook, syndicate assignment, examination

Subject aims and description
This subject forms an important part of the market analyst's tool kit. The subject 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 subject 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

References
SSDA Catalogue, Social Science Data Archives, Australian National University, 1991

BQ222 Quantitative Management Techniques
Students intending to complete a major or minor in accounting are strongly recommended to include this subject as part of their studies
No. of hours per week: three hours
Prerequisites: BQ111 Quantitative Analysis B or (BQ111E + BQ110) Quantitative Analysis A
Instruction: lecture/tutorial
Assessment: examination/syndicate assignment

Subject aims and description
This subject 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 subject, students will gain an understanding of the inter-relationships between business modelling techniques and the traditional accounting function in an organisation. In addition, this subject will form the basis for a more extensive study of the application of these techniques in subsequent subjects.
The emphasis of this subject 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 subject 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;
- the use of business modelling techniques to manage inventory;
- an introduction to general approaches to planning and decision-making;
- an introduction to total quality management and quality control techniques using control charts and acceptance sampling.

Textbook


References

Anderson, M.O. and Lievano, R.J. Quantitative Management: An Introduction. 2nd edn, Boston, Mass., Kent, 1986

Heizer, J. and Render, B. Production and Operations Management Strategies and Tactics. 3rd edn, Boston, Allyn and Bacon, 1993

BQ223 Business Demography

No. of hours per week: three hours

Prerequisite: BQ111 Quantitative Analysis B or (BQ110E + BQ111) Quantitative Analysis A

Instruction: lecture/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 subject consists of an introduction to the basic methods of demographic analysis for human populations, enterprises and industries. The aim of the subject is to explore the market implications of demographic change. The approach taken in this subject is a practical one and therefore considerable use will be made of PC-based business modelling software packages.

The subject 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


BQ330 Market Modelling

No. of hours per week: three hours

Prerequisite: BQ111 Quantitative Analysis B or (BQ110E + BQ111) Quantitative Analysis A

Instruction: lecture/tutorial

Assessment: individual and syndicate assignment

Subject aims and description

This subject aims to familiarise students with some of the techniques and skills not yet encountered, but needed to undertake the successful modelling of micro and macro markets and business relationships.

The subject will normally cover the use of:
- regression analysis, in its various forms, to assist the modelling of demand and supply and other business relationships;
- qualitative forecasting methods such as delphi, panel consensus and scenario analysis;
- Markov analysis for the investigation of market behaviour (e.g., brand switching) and for the analysis of market share.

Textbook


BQ331 Survey Research Methods

No. of hours per week: three hours

Prerequisite: BQ221 Marketing Data Management

Instruction: lecture/laboratory

Assessment: six survey research tasks, one individual assignment

Subject aims and description

This subject 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.

References


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-disciplinary approach, students may, subject to approval, undertake selected honours-level coursework subjects from other schools, divisions, or institutions provided that they show the relevance of these coursework subjects to their proposed area of research. Such arrangements are 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 subject.

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.

Research Methodology

No. of hours per week: three hours
Prerequisites: nil
Instruction: seminar
Assessment: seminar participation

Subject aims and description

The Research Methodology subject 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 subject 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

Emory, C.W. and Cooper, D.R. Business Research Methods. 4th edn, Homewood, Ill., Irwin, 1991
BQ500  **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 subject 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 subject, 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**  

BQ509  **Business Modelling**

No. of hours per week: three hours for two semesters  
Prerequisites: nil  
Instruction: seminars and workshops  
Assessment: syndicate assignments

**Subject aims and description**  
This subject is designed to give students a working understanding of the role of quantitative analysis in the decision-making process. The skills acquired are used in other subjects of the course as well as giving an appreciation of quantitative techniques via practical applications. User-friendly computer packages are employed throughout the subject wherever possible, reflecting their importance and usefulness.

The topics included are: demography, linear programming, forecasting, inventory management, quality control and survey data analysis.

**Textbook**  

BQ507  **Market Modelling 1**

No. of hours per week: two hours  
Prerequisites: nil  
Instruction: lecture/tutorial  
Assessment: individual assignments

**Subject aims**  
This subject 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 subject.

Note that throughout this course, extensive use will be made of computer software packages.

In this subject, 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**  

BQ601  **Financial Modelling**

**Subject aims and description**  
The aim of this subject 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 subject, 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, microcomputers and current software developments, financial modelling using spreadsheets, 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 subject.

BQ606  **Business Demography**

No. of hours per week: two hours  
Prerequisites: nil  
Instruction: lecture/laboratory  
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 subject 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 subject aims to familiarise 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 use will be made of computer software packages.

Subject description
Incorporating qualitative techniques including delphi, group consensus scenario, and historical analogy into demand models.

Causal approaches to forecasting, including a broad range of regression techniques.

Model fitting and evaluation.

Markov process theory.

Textbook

BQ703  Technological Forecasting
- Prerequisites: Completion of the Graduate Diploma in Management Systems or equivalent
- Assessment: Pass/fail only. Major case study submitted in form of management report

Subject aims and description
- be able to carry out a full scale technological forecasting exercise and then, via the medium of a management report, communicate the findings to the appropriate people;

Topics include general introduction to forecasting approaches; time based forecasting techniques; technological forecasting; scenario analysis; latest developments in IT.

References

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 subject 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 subjects, 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 (Microsoft Excel or 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, Word for Windows, Excel, 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 IA and BT103 Information Technology IB
Instruction: lecture/laboratory
Assessment: examination/assignment

**Subject aims and description**

This subject extends the basic information technology user skills gained in BT110 to the development of a simple automated personal data base update 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.

**Reference**


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**BT221 Business Computing**

No. of hours per week: three hours
Prerequisites: BT110 Information Technology or both BT102 Information Technology IA and BT103 Information Technology IB
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

**Subject aims and description**

The subject is specifically for students taking the business computing major or minor or non-computing majors. The subject 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 subject also aims to enhance skills in the verbal and written presentation of system studies. The subject 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.

Recent textbooks used:


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**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 subject 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**

Recent textbooks used:


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**BT223 Information Systems**

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 subject
Instruction: lecture/tutorial
Assessment: examination/assignment

**Subject aims and description**

This subject 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 subject 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 success 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.
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 subject 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 subject the students develop an understanding of the nature and uses of expert systems in business. The subject 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 based design;
• evolutionary process of knowledge acquisition needed to input 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

References
BT27 Programming 1B
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 subject, 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 C programs;
- design, write, test, and document attractive, well-structured programs in C.

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 subjects
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignments

Subject aims and description
This subject concentrates on data communications architectures. In particular, at the completion of this subject, 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
After a general introduction to new operating systems and how communications software manages computer resources, the subject looks at UNIX and DOS/Windows environments in particular, both from the communications architecture and usage aspect.

References

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 subject 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

BT334  Information Technology Strategies
No. of hours per week: three hours
Prerequisites: any two Stage 2 Computing subjects
Instruction: lecture/tutorial
Assessment: examination/assignments

Subject aims and description
This subject 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 subject 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

BT335  Business Software Engineering
No. of hours per week: four hours
Prerequisites: BT220 Data Analysis and Design, BT223 Information Systems 1
Instruction: lecture/laboratory
Assessment: examination

Subject aims and description
In this subject, 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.

On completing this subject, students will be able to:
- describe the process of design
- state and explain the goals of information systems design
- describe some important design techniques
- select suitable techniques for a given situation
- competently apply techniques to design simple systems
- use at least one CASE software product
- specify tests for proving systems
- describe design techniques for CASE environments
- discuss some current issues in systems design

References
Barker, R. Case and Method: Tasks and Deliverables. Wokingham, Addison-Wesley, 1990
Barker, R. Case and Method: Entity Relationship Modelling. Wokingham, Addison-Wesley, 1990

BT336  Advanced Application Development
No. of hours per week: four hours
Prerequisites: BT220 Data Analysis and Design, BT224 Programming 1
Instruction: lecture/laboratory
Assessment: assignment

Subject aims and description
This subject provides students with the opportunity to work in a formal project team environment on the development and implementation of an information system.

The objective is to employ the practical skills learned in other subjects, 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

BT337  Programming 2B
Prerequisite: BT227 Programming 1B
This subject provides advanced studies in programming methodologies and will develop knowledge gained in Programming 1B.

References
To be advised
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-disciplinary approach, students may, subject to approval, undertake selected honours-level coursework subjects from other schools, divisions or institutions provided that they show the relevance of these coursework subjects 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 subjects by the offering School.

Students must submit their proposal to the Information Systems 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.

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. Student's 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.

Business Software for PCs

Subject aims

The aim of this subject 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 utilise in other areas of the course.

Subject description

Throughout the subject, 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, databases and evaluation and selection of software.

References

Software documentation, user manuals and current journal articles will provide the major reference material for the subject.

Introduction to Information Technology

Prerequisites: prior to beginning this subject students are not expected to have any previous experience with computers or information technology.

Subject aims and description

At the end of this subject 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.

Business Computing

Subject aims and description

This subject 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 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 subject concludes with a discussion of the social implications of introducing new information technology.
At the end of this subject, 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**


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**BT404  Computer Programming**

**Subject aims and description**

This subject aims 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**


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**BT405  Information Systems Strategies**

No. of hours per week: three hours

Instruction: lecture/tutorial/laboratory

Assessment: to be advised

**Subject aims**

The aim of this subject 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 description**

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 E.D.I.;
- 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;
- using technology for operational, tactical and strategic advantage.

**References**


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**BT406  Data Base Design and Implementation**

No. of hours per week: three and a half hours

Prerequisite: **BT404 Computer Programming**

Instruction: lecture/laboratory

Assessment: examination/assignment

**Subject aims**

This subject is very much a hands-on subject. 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 subject 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;
have a good understanding of the terminologies and concepts associated with relational DBMS;
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
Date, C.J. An Introduction to Database Systems. Vol. 1, 4th (1986) or 5th (1990) edn, Addison-Wesley

BT407 Technology and Change

Subject aims
The aim of this subject 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.

Subject description
Topics include:
- approaches to information systems planning
- understanding corporate culture
- impact of IT on management
- managing change
- 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
Koony, J.L. and Medley, D.B. Management Information Systems: Planning and Decision Making, Cincinnati, South-Western, 1987

BT411 Computing for Management
No. of hours: sixteen total
Prerequisites: nil
Instruction: lectures/laboratories
Assessment: examination

Subject aims and description
To extend the students' knowledge and understanding of information technology in various current and relevant areas.
Topics include:
- financial modelling using spreadsheets
- computer basics
- input/output
- files and databases
- business information systems
- data communications
- data management
- using information technology for competitive advantage

Textbook
None.

References
Capron and Perron, Computers and Information Systems, Benjamin/Cummings, 1993
Any introductory information technology textbook, or book titles typically 'Management Information Systems'

BT412 Current Issues in Systems Designs
Refer BT502.

BT413 Software Engineering Strategies
Refer BT503.

BT502 Current Issues in Systems Design
This subject is equal to two semester subjects

Subject aims
In this subject, some of the most recent developments and trends in computer applications and technologies are examined to:
- encourage students to appraise critically 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 will serve as a guide:

BT503 Software Engineering Strategies
A one semester subject in the graduate diploma course in management systems. This subject is equal to two semester subjects.

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 edn, Reading, Mass., Addison-Wesley, 1990

BT504 Introduction to Information Technology
Prerequisites: prior to beginning this subject students are not expected to have any previous experience with computers or information technology

Subject aims
At the end of this subject 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 subject 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

References
Eden, P. Entity Relationship Analysis, Hawthorn, Vic., Swinburne Press, 1993
**BT521 User End Computing**

No. of hours per week: three hours  
Prerequisites: BT504 Introduction to Information Technology  
Instruction: lecture/tutorial/laboratory  
Assessment: examination/assignment

**Subject aims and description**
The subject 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 BT504 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 subject also aims to enhance skills in the verbal and written presentation of system studies. The subject 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 Fonney, M.B. Accounting Information Systems. 6th edn, Reading, Mass., Addison Wesley, 1994  

**BT22 Business Computing Applications**

No. of hours per week: three and a half hours  
Prerequisites: 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 subject builds on the knowledge and skills developed in BT221 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

**BT23 Systems Analysis 1**

No. of hours per week: three and a half hours  
Prerequisites: BT504 Introduction to Information Technology  
Assessment: examination/assignment

**Subject aims and description**
This subject will expand on the skills learnt in BT506 Information Analysis and relate them 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 subject 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

**References**
To be advised

**BT524 Programming A**

No. of hours per week: four hours  
Prerequisites: BT504 Introduction to Information Technology  
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

**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 subject the students develop an understanding of the nature and use of expert systems in business. The subject involves practical work using the expert system building tools, VP-Expert and ESE.

A second year subject 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 based 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**


**References**


**BT527  Programming B**

Prerequisite: BT504 Introduction to Information Technology

**Subject aims and description**

This subject builds upon the programming skills and concepts learned in BT504.

This subject 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**

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.

**Subject aims**

After completing this subject, students should be able to:
- understand the main reasons for success or failure of information systems projects;
- coordinate 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
BT603  Management Systems

Subject aims
This subject 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 infrastructure within their own organisations.

References
Plus extensive reading of current journals

BT606  Data Base Management Strategies

Replaced by BT630 Data Base.

BT607  Data Communications and Office Automation

Replaced by BT631 Communications and Architecture 1.

BT608  Systems Development Strategies

Replaced by BT634 Systems Development Strategies.

BT611  Systems Software

Replaced by BT632 Communications and Architecture 2.
BT630  Data Base Management Strategies
No. of hours per week: four hours
Prerequisites: BT506 Information Analysis, BT524 Programming A or BT527 Programming B
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

Subject aims and description
By the end of this subject 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 subject builds upon the logical design concepts taught in BT506 Information Analysis in covering the implementation, considerations of a number of DBMSs. The students' acquaintance with SQL from that subject is also built upon in the coverage of relational data bases.

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/assignment

Subject aims and description
This subject concentrates on operating system architectures. In particular, this subject 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

BT631  Communications and Architecture 1
No. of hours per week: three and a half hours
Prerequisites: any two level 2 computing subjects
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims and description
This subject concentrates on data communications architectures. In particular, at the completion of this subject, 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

BT633  Systems Analysis 2
No. of hours per week: three and a half hours
Prerequisites: BT506 Information Analysis and BT523 Systems Analysis 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 subject 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 subjects
Instruction: lecture/tutorial
Assessment: examination/assignment

Subject aims and description
This subject 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

By doing so, to deepen and broaden the understanding of practical computing, and to reinforce the theory learned in other subjects.

References
To be advised

BT637 Advanced Programming B

No. of hours per week: four hours
Prerequisites: BT506 Information Analysis with BT523 Systems Analysis 1 or either BT524 or BT527
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignments

Subject aims
In this subject, 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 subject 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 BT527 Programming 2
Instruction: lecture/laboratory
Assessment: assignments

Subject aims and description
This subject provides students with the opportunity to work in a formal project team environment on the development and implementation of an information system.

The objective is to employ the practical skills learned in other subjects, 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 subjects.

References
To be advised

BT703 Introduction to Business Software

No. of hours per week: twenty hours
Prerequisites: nil

Subject aims
The aim of this subject 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 utilised 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 data bases.
- Availability and accessing of public data bases.
Textbooks
As this subject is primarily concerned with the use of application software and current developments in using microcomputers, textbooks form a minor component of reference material. Software documentation, user manuals and current journal articles will provide the major reference material for the subject. It is required that students have access to a PC for work undertaken outside formal session times.

BT707 Information Technology Effectiveness
No. of hours per week: three hours
Prerequisites: completion of the Graduate Diploma in Management Systems or equivalent
Instruction: a combination of lectures, seminars and workshops
Assessment: assignment and research report

Subject aims
This subject focuses on the effective management of IT resources.

On completion of this subject 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 measured at both strategic and tactical levels; evaluating IT investments including IT infrastructure.

Textbooks
No single text covers the subject material

References
Carlson, W.M. and McNurlin, B.C. Uncovering the Information Technology Payoffs, Rockville, Md., United Communications Group, 1992
Quinlan, T.A. EDP Cost Accounting, New York, Wiley, 1989

BT708 Technology and Innovation
No. of hours: involves a number of seminars predominately conducted over two weekends
Prerequisites: BT707 Information Technology Effectiveness, BQ703 Technological Forecasting
Instruction: lectures, seminars, workshops
Assessment: assignment and research report

Subject aims
This subject 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 subject 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 subjects 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.

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 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.

**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**

**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.
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.

Textbooks  
Latimer, P. Australian Business Law 13th edn, 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.

Textbooks  
Hindle, K.G. What is a Marketing Case Study and How do you Solve it. Hawthorn, Vic., Swinburne Press, 1992  

EF624  Management Practice  
No. of hours per week: six hours  
A compulsory subject in the Graduate Diploma in Management for part-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; 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
An elective subject in the Graduate Diploma in Management.

Subject aims and description
The subject addresses management applications 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, desktop 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
An elective subject in the Graduate Diploma in Management.

Subject aims and description
The subject seeks to extend the student’s knowledge of engineering oriented 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
An elective subject in the Graduate Diploma in Management.

Subject aims and description
The sales function: relationships with advertising, sales, promotion, product planning, market research and distribution, feedback from market.

The selling process: prospecting, presentations, handling objections, closing, follow up. Buyer behaviour and motivation.


EF630  Manufacturing Management
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 5 Ps of Japanese manufacturing technique, VAM, world class manufacturing, JIT production system and theory Z.

References

EF631  Physical Distribution Management
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
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
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 subject 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. 

Textbooks 

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 subject 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. It can also be taken as an elective in the Graduate Diploma of Management.

Subject aims and description

This subject 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


EF810  New Venture Financial Planning

No. of hours per week: three hours

A subject in the second year of the Graduate Diploma in Entrepreneurship and Innovation and first year of the Master of Enterprise Innovation.

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


EF811  New Venture Financial Planning

No. of hours per week: three hours

A subject in the second year of the Graduate Diploma in Entrepreneurship and Innovation and first year of the Master of Enterprise Innovation.

Subject aims and description

Students who have passed this subject should possess:

- demonstrable mastery of fundamental financial mathematics, basic practical financial modelling techniques and sufficient financial theory for competent financial analysis, planning and management of a startup venture;
the ability to apply those skills by producing a comprehensive financial plan for a new venture embodied in an accurate and credible set of projected financial statements suitable for inclusion in a business plan for that venture;

the skills and acumen necessary to evaluate, dispassionately and professionally, new-venture financial projections from the point of view of a prospective investor and thus arrive at a valuation for the venture;

a good general knowledge of the institutions and factors affecting new venture financing, nationally and internationally;

sufficient grounding in financial theory and its applications to pursue and acquire further specific knowledge in areas not covered by the course.

**Textbook**

**References**

**EF812** Entrepreneurship, Law and Ethics

No. of hours per week: three hours

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 subject 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 (Organisational Behaviour) 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**

**EF814** The Business Plan

No. of hours per week: three hours

A subject in the second year of the Graduate Diploma in Entrepreneurship and Innovation and first year of the Master of Enterprise Innovation.

Normally, students of the Graduate Diploma in Entrepreneurship and Innovation undertaking this unit must have satisfactorily completed all first year subjects and be undertaking the standard second year program.

**Subject aims and description**

This subject aims to provide the entrepreneur with an appreciation of a business plan in: raising venture capital, defining the potential risk and problems in a venture, testing and building the entrepreneurial team and planning the operation of a business.

Self-selected teams will choose an invention or product as a basis for a business opportunity and will develop an appropriate business plan.

Generally, teams will work independently and will be tutored by staff on specialist areas. Some lectures by external will be held and time will be allocated for the development of presentation skills.

**Textbook**
EF814G  **Strategy and Business Planning**

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 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 subject is to enable the student to apply the diverse generic theories and principles of program planning to their discrete organisational 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**


EF822G  **Training Innovation and Evaluation**

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 instructed in the identified knowledge, skills, competencies and work requirements of training program innovation and evaluation. The prime focus of this subject is to provide course participants with the appropriate theory and resources to both manage and evaluate innovative training programs in a changing market driven organisational environment.

Topics include: training and the management of innovation, innovative training methods, influence of effects of innovative training, models of training evaluation, training effects, designing evaluation interventions, quantitative and qualitative analysis, cost benefit training analysis, the marketing of training, professional development.

**Textbooks**


EF823G  **Administration of Training**

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 identified knowledge, skills of on-the-job practical management of training program administration. The principal aim of the course is to enable participants to manage the organisational pressure, demands and resources of program administration in an innovative and systematic manner.

Textbooks
Material in this course is based on Davies, A., Stock, J. Macleod, J. Williams, C. and Cross, M. The Management of Training. Camforth, England, Parthenon Publishing, 1987, but has been adapted to Australian conditions by course lecturers

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 subject 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

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 relationships; takeovers: bankruptcy.

Textbook

EF924 Advanced Business Plan
No. of hours per week: fifty-six hours over two semesters
A subject in the Master of Enterprise Innovation.
Subject aims and description
This subject requires students, in supervised teams, to write their second business plan. They draw on the experience of their first effort in EF814 and the growing sophistication in entrepreneurial management acquired in both second year Masters subjects. They produce a business plan of a calibre high enough to meet the standards of an investment analyst operating in an internationally established venture capital company.

EF931 Entrepreneurship in Corporations
No. of hours per week: fifty-six hours
A subject in the Master of Enterprise Innovation.
Subject aims and description
This subject 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 per week: fifty-six hours
A subject in the Master of Enterprise Innovation.
Subject aims and description
This subject builds on previous subjects 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 RHS 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

References

Entrepreneurial Research Project
No. of hours per week: 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.

Textbooks

References
Emory, W.C. and Cooper, D.R. Business Research Methods. 4th edn, Homewood, Ill., Irwin, 1991

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 School of Chemical Sciences 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 micro-organisms. Microbes and pathogenicity.
Practical work reinforces the theory.

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: hands on SPSS Computer test, SPSS and statistics written text and exam

**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.

**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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S. Yip, M.Sc(Melb), Grad Dip Inf Syst(RMIT), Grad Dip Comp Stud(LaT), Tech Cart (Hong Kong)
H. Younessi, B.Sc(Eng)(RPI-USA), M.App.Sc(InTech)(SIT)

Part-time Academic Staff
M. Cameron, B.Eng(Elec)(Hons), Grad Dip Mtg(SIT)
A. Klebanowski, M.Sc. Ph.D(Warsaw)
A.H. Overmars, B.Eng(SIT)

Computer Systems Officers
G. Collins, B.App.Sc, B.App.Sc(Cart), Grad Dip (Auto Cart)(RMIT), D. McConnel
D. Tran, B.App.Sc(SIT)

Administrative Officers
E.A.R. Livings, B.Sc(Hons)(LaT), Grad Dip Stud Hum(Eng)(LaT)
G.J. McWilliam, B.A(Hons), Dip Ed(Melb), AmusA(AMEB), MedPA(Mon)

School of Mathematical Sciences

Head
J.R. Iacono, B.A.(Mon), M.E.C, TPTC

Associate Professors
S.R. Clarke, B.Sc(Hons), Dip Ed(Melb), MA(Lanc)
A.K. Easton, B.Sc(TArc), M.Sc(Flin), Ph.D(Flin), FIMA
P.L. Jones, B.Sc(Melb), Dip Ed, Ph.D(Mon)

Principal Lecturers
P.A. Evans, Dip Ed, M.Sc(Melb)

Senior Lecturers
C.R. Barling, Dip.Ed(Hav), AMusA(AMEB), M.Sc(LaT), N.F. Garnham, Dip.Ed(Melb), M.Sc(Kent)
D.H. Noble, B.Sc(Hons)(St Andrews), MA(Lanc)
M. Singh, M.Sc, Ph.D(Roorkee)
J.M. Steiner, B.Sc(Hons), Ph.D(Mon)
S.E. Weal, B.App.Sc(RMIT), MA(Lanc)

Lecturers
G.J. Francis, B.Sc(Hons), Ph.D(Mon)
F. Ghorbani, B.Eng(Iran), M.Sc, Ph.D(GWU)
G.D. HANDLEY, B.E.(Hons), MBA(Melb), MIE(Aust), C.Eng
J.C. Herzel, B.A, M.App.Sc, Ph.D(Melb)
D.C. Jackson, B.A(Hons)(Mon), AMusA(AMEB), Ph.D(Mon)
N. Khan, M.Sc(BOA)
N. Li, M.Sc(China)
D. Lucy, B.Sc(Hons)(Mon), Dip.Ed, Ph.D(Mon)
D.C. Mainwaring, Dip.Ed(MSc), M.Sc(LaT)
D.J. Richards, B.Sc(Hons)(Mon), LLB(Mon)
J. Sampson, TTC(TTC), Dip.Surv(RMIT), Grad Dip DP(CT), M.Sc(Mon)
A.P. Skewes, B.Sc, Dip.Ed(Melb) M.Com(Hons)(Melb)
J.R. Taffe, B.A(Mon), M.Sc(Melb)
PC. Tobin, B.Sc(Hons)(Melb), Dip.Ed(MCAE), M.Ed(StMon), M.App.Sc(RMIT), AFIMA

Administrative Officers
D.P. Fernandes
H. Giannakis, Dip.T(Vict), Grad Dip Ed Admin(HIE)
Mathematics Education Resource Centre
Coordinator
B.M. Leary, BAppSc(VIC), FRMIT
Assistant Coordinator
K.B. Clarke, BA(Melb), TSTC

School of Mechanical and Manufacturing Engineering

Head
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Professors
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Associate Professors
J.M. Brown, BE(Mech), BSc, MAAppSc, PhD(Melb)
E.D. Doyle, BSc(Hons)(Manchester), PhD(UK)
R. Llewelyn, BScEng, FIEAust, CEng
Y. Morsi, BE(Hons)(Egypt), BScDesign(Leeds), MSC, DIC, PhD(Imperial Coll Londo), FIEAust, CEng

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Coordinator, Mechanical Programs
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Coordinator, Aviation Program
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Manager, Research Activity (CIM Centre)
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M.D. Buley, DipMechEng(SIT), TTT(C(TC)BE(Mech)(Mon), MSc(Aston)
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B.J. Costello, CertManuEng, GradDipEd(Haw), BEng(Prod)(VIC), CMfgE, CEng
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BC. Higgins, BA, BEngSc(Mon)
M. Maj, DipEng, MIE(ManE), NVH, CEng
S.H. Masood, BScEng(Hons)(Alig), PDip(ProdEng)(IT Delhi), MEng(NewBrun), PhD(Qld)
C.R. Nagarajah, BScEng(Hons), MPhil(UK), PhD, CEng, MIE(ManE)
M.E. Shayan, BEng(Tehran-Iran), MScOR(USA), GradDipCompSci(Melb), PhD(OR)(USA)
P.M. Spencer, DipMechEng(SIT), BE(Mech)(Melb), GIMechE
M. Suffern, BE(Chem)(Mon), DipChemEng, DipAppChem(SIT)
L.P. Travis, BSc, MS, PhD(Calif)
S. Tavrou, BSc(Hons)(UK), MEngCIM(SIT)

Lecturers
N. Alston, BA(LAT)
V. Bulach, DipMechEng, BE(Mech), BEngSc, DipEd, MEngSc(Melb), GIMechE
R. Cummins, ARIC
S. Fankhauser, BE(Aero)(RMIT)
J.C. Harris, BE(Mech)(Qld), MSc(Mon)
G.R. Hjorth, BE(Mech)(Melb), MIE(Aust)
P. Ivuenitti, FRMIT, MEngSc(Mon), GradDipE Aust
D.A. Lee, BScEng(Mech), BA, Med, CEng
H. Knol, TTT(Haw), DipProdEng(RMIT), CEng
R. Mierisch, DipMechEng(SIT), DipEd
J. Mlynek, GradEng(Mech)(Mos), MEng(War), CEng
A. Williams

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J.K. Currey, DipMechEng(CIT), PDipVac&R(SIT), BE(Mech)(VIC), TTT(C(TC), CEng
N. Harris, BEng(Mech)(Mon)
A.L. Hill, DipMechEng(SIT)
P.J. de Jonghe, AAl
H. MacKenzie, BEng(Mech)(SIT)
B.M. McDonald, DipMechEng(CIT)
I.D. Roberts, BEng(Hons)(Mech)(SUT)
G. Ross, BSc(Hons)(Birm), ChemEng, MEng(vic), FIChemE, CEng
J. Roijer, BSc, MSc, MEngSc
K. Singh, Dip-Ing(Germany), BSc(Hons), MScEng, MIMechE
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W.G. Teague, DipMechEng(CIT), BComm, BE(Mech), MEngSc(Melb)
D. Tonich, BEElec(Hons)(Melb), MEng(SIT), CEng, CEng
J.J. Zagorski, BScEng(London), FIEAust, MIMechE, AFAIM
H. Zerno, BEng(Mech)

Laboratory Managers
V.C. Deeker

Administrative Officers
E. Jones
J. Chandra, BBus(GIAE)(SUT)

Centre for Computer Integrated Manufacture

Director
Professor W. Thompson, BScEng(Hons)(UK), GradDipEd(Haw), MEng(UK), FIEAust, CEng

Research Manager
D. Tonich, BEElec(Hons), MEng, CPE

Education Manager
B. Costello, BEng(Prod)(VIC), GradDipEd(Haw), CManEng

Research Support Engineers
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J. Zhang, BEng(Mech), MEng(CIM)

Research Associates
A. Anam, BEng(Mech)
G. Bitterfield, MSc(Mech), DipEd(Isreal), DipEd(Mon), CEng
G. Brien, BSc(Physics), GDip(Robotics)
G. Cao, BEng(Mech)(Hons)
J. Chatwin, BEng(Mech)(Hons)
T. Cleary, BEng(Mech)(Hons)
F. Costa, BEng(Mech)(Hons)
A. Dennison, BEng(Elec)(Hons)

P. Douglas, BEng(Mech)
G. Frankish, BEng(Mech)(Hons)
C. Huynh, BEng(Mech), MTech(CIM)
K. Jolic, BEng(Mech)(Hons)
A. Kop, BEng(Mech)(Hons)
G. Lewis, BEng(Mech)(Hons)
A. Luscombe, BEngMech
G. McNamara, BEng(Mech)(Hons)
B. Nayak, BEng(Mech)(Hons)
C. Ng, BEngElec(Hons)
A. Overmars, BEng(Elec)(Dist), BComm, MEng
K.M. Papajohes, BEng(Mech)
S. Pathy, BEngElec
M. Peacecock, BEng(Mech)(Hons)
D. Rogers, BEng(Mech)(Hons)
The Swinburne School of Design

Professors
Head of School
R. Miller-Smith, FCSD, FDIA, FSTD, FRSA

Research
T.A. Whitfield, BA(Hons), PhD

Head, Department of Graphic Design
D.G. Murray, BA(GraphicDesign)(SIT), TTTC, MDIA

Head, Department of Industrial Design
G.A. Lewis, DipA&D(ID)(Prharn), MDIA

Academic Coordinator
R. Macfarlane, DipArt(SCOT), TTTC

Principal Lecturer
C.J. Austin, BA(GraphicDesign)(SIT), MDIA

Senior Lecturers
J. Bassani, DipArt&Design(Prharn), GradDipEd(Haw), MDIA
R. Graham, AssocDipArt(GraphicDesign)(RMIT), DipArt(Advertising)(Bendigo), TTTC
S. Huxley, DipArt&Design(Bristol), CGI, CertPictGraphics 1 and 2(London), GradDipEd(Haw)
H. Lueckerhausen, GradDip(IndustrialDesign)(RMIT), DipEd(Haw)
D.M. Whitehouse, AALA, BAHons(LaT), MA

Lecturers
C. Barnes, BEd(MelbSCV), BA(Hons)(Melb)
PE. Blair, DipArt(GraphicDesign)(RMIT), GradDipEd(Haw)
D. Bryans, BA(GraphicDesign)(SIT), DipEd(Haw)
W. Cuthbert, DipArt&Design(Prharn)
R. Duncan, DipDesign(London)(Craft), HKS(Sweden)
P. Gajree, OAM, DipEd(Haw), FBIPP(England), FPSA(USA), MFIP(Belgium), FMPS(Lon), HonFFPS(England)
A. Haig, BA(GraphicDesign)(SIT)
J. Howell, DipCommArt(Adelaide)
R. Jones, BA(ANU)
RF. Kinnane
R.A. Newbound, CertPrint
D. Snibson, DipArt & Design (Graphic Design)(Prharn)
T. Streader, BA (GraphicDesign)(SIT)
L. Taylor, DipArt&Design(GraphicDesign)(VicColl)
T. Ward, DipAdvertDes(SCOT), TTTC

Computer Systems Officer
C.A. Higman

Administration
E. Tipping
B.H. Giouris
E. Standley
G. Werner

Workshop Supervisor
L. Jones
Swinburne Centres Associated with Division of Science, Engineering and Design

Centre for Applied Colloid/Biocolloid Science
Centre for Applied Neurosciences
Centre for Biomedical Instrumentation
Centre for Computer Integrated Manufacture
Centre for Engineering Technology
Centre for Systems Methodologies
Design Centre
Energy Systems Engineering Centre
Laboratory for Concurrent Computing Systems
National Scientific Instrument Training Centre
Science Education Centre
National Centre for Women: Employment, Education and Training

Courses offered

The Division of Science, Engineering and Design includes:
- School of Biophysical Sciences and Electrical Engineering
- School of Chemical Sciences
- School of Civil Engineering and Building
- School of Computer Science and Software Engineering
- School of Mathematical Sciences
- School of Mechanical and Manufacturing Engineering
- The Swinburne School of Design

Applied Science Undergraduate

**Bachelor of Applied Science**
— Hawthorn campus

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>2051</td>
<td>Applied Chemistry</td>
</tr>
<tr>
<td>2070</td>
<td>Applied and Industrial Maths</td>
</tr>
<tr>
<td>2052</td>
<td>Biochemistry/Chemistry</td>
</tr>
<tr>
<td>2063</td>
<td>Computer Science (conversion)</td>
</tr>
<tr>
<td>2056</td>
<td>Computer Science and Software Engineering</td>
</tr>
<tr>
<td>2059</td>
<td>Computing and Instrumentation</td>
</tr>
<tr>
<td>2062</td>
<td>Environmental Health</td>
</tr>
<tr>
<td>2058</td>
<td>Mathematics and Computer Science</td>
</tr>
<tr>
<td>2061</td>
<td>Medical Biophysics and Instrumentation</td>
</tr>
<tr>
<td>2062</td>
<td>Psychology and Psychophysiology</td>
</tr>
</tbody>
</table>

**Bachelor of Applied Science (Honours)**

- Applied Chemistry
- Biochemistry
- Computer Science
- Environmental Health
- Mathematics
- Medical Biophysics
- Medical Biophysics and Instrumentation
- Psychophysiology
- Scientific Instrumentation

Postgraduate

**Graduate Certificate in Applied Science**

- Health Statistics
- Social Statistics

**Graduate Diploma in Applied Science**

- Applied Colloid Science
- Biomedical Instrumentation
- Computer Science
- Health Statistics
- Industrial Chemistry/Biochemistry
- Social Statistics

**Master of Applied Science**

- By research
  - Applied Colloid Science - by coursework
  - Biomedical Instrumentation - by coursework
  - Social Statistics - by coursework

- Master of Information Technology

**Doctor of Philosophy**

Engineering Undergraduate

**Bachelor of Engineering**

- Civil
- Electrical Power and Control
- Communication and Electronic Computer Systems
- Manufacturing
- Mechanical

**Bachelor of Information Technology**

- Information Technology
Bachelor of Technology
M055
Aviation
C051
Building Surveying
Y050
Degree of Bachelor of Technology

Postgraduate

Graduate Diploma in Engineering
M082
Air Conditioning
P085
CAD/CAM
P083
Chemical Engineering
P087
Computer Integrated Manufacture
C082
Construction Management
M081
Maintenance Engineering
P081
Manufacturing Technology
M083
Risk Management

Masters by coursework
C092
Construction Management
P091
Computer integrated Manufacturing
P093
Master of Technology (Computer Integrated Manufacture)

Masters by research
Y096
Civil Engineering
Y097
Electrical Engineering
Y099
Manufacturing Engineering
Y098
Mechanical Engineering

Doctor of Philosophy
Y006
Civil Engineering
Y007
Electrical Engineering
YM07
Electrical Engineering (Mooroolbark campus)
Y008
Mechanical and Manufacturing Engineering

Design
Bachelor of Design (Graphic Design)
Bachelor of Design (Industrial Design)
Bachelor of Design (Honours)(Graphic Design)
Bachelor of Design (Honours)(Industrial Design)

Mooroolbark campus courses
The Bachelor of Applied Science degree programs, in Management Science and Computing, and Computer Science and Psychology are currently offered at the Mooroolbark campus.

Honours Year
For information regarding honours year studies please contact the Divisional office or see the appropriate entry in this Handbook.
Honours programs are only available on the Hawthorn campus.

General Divisional Information

Applied Science

Application procedure
Application for admission to undergraduate or postgraduate courses in 1995, at Hawthorn or Mooroolbark campus, should be made on the appropriate form, obtained and lodged as follows:

Course: Apply through:
Undergraduate

VTAC
40 Park Street,
South Melbourne

Undergraduate

Bachelor of Applied Science

Direct to the Division of
Science, Engineering
and Design

Undergraduate

Bachelor of Applied Science
(Honours)

Direct to the Division of
Science, Engineering and
Design

Undergraduate

Special entry*

Direct to the Division of
Science, Engineering and
Design

Postgraduate**

Graduate Certificate Applied Science

Direct to the Division of
Science, Engineering and
Design

Graduate Diploma Applied Science

Direct to the Division of
Science, Engineering and
Design

Master by coursework

Direct to the Division of
Science, Engineering and
Design

Master by research and
Doctor of Philosophy

Apply in writing to
the Division of
Science, Engineering and
Design

** Part-time — Some postgraduate programs may be offered only as full-time, or only as part-time.

Special entry*

A Special Entry Scheme operates, designed primarily to benefit those whose qualifications do not meet normal entry requirements. However, for Applied Science and Engineering selection, applicants must have passed the specified prerequisites for the course.

Admission with advanced standing
Certain subjects passed at another institution may provide advanced standing in the preceding courses.
All applications for subject exemptions should be submitted to the Manager, Administration 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 Divisional Board.
Exemptions are granted by the Divisional 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.

**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.

**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.

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. Student performance is assessed by various methods, such as 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 Division of Science, Engineering and Design, but the Division 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 Manager, Administration. Conveners of the relevant subjects will be advised so that consideration may be granted by the Division 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 subjects, 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 Divisional 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.

       Students who enrol in combinations of subjects where the combination involves only small numbers of students must accept:

       1. Timetabling of classes may be less than ideal, 
       2. Timetabling of examinations may involve successive examinations on the one day, 
       3. The difficulties encountered in 1 and 2 above may not be cited as reasons for poor performance.

   1.2 **Supplementary Program**

       The Division of Science, Engineering and Design will operate a limited Supplementary Examination 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 Examination Program will embrace all undergraduate science and engineering subjects taught by the Division of Science, Engineering and Design. Entry to the program will be limited, will depend on overall performance and will not be automatically available.

   **Eligibility**

       All enrolments in the Supplementary Examination Program will be at the discretion of the Divisional Courses Committee which will take the advice of the school responsible for the subject. The following conditions will normally apply:

       The student must have achieved a result of not less than 40% in a subject before consideration for a Supplementary Examination.
A Supplementary Program in laboratory and project components will not be available and therefore the student must have satisfied the practical laboratory and/or project requirements for any subject for which enrolment in the Supplementary Program is being considered.

Subjects offered by the other Divisions will be bound by the rules of those teaching Divisions.

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 Division.

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 Manager, Administration.

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 Division 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 as 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 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;
- 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.

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**Engineering**

**Feeder courses**

An arrangement exists with LaTrobe University College of Northern Victoria, Bendigo which enables students to undertake part of a Swinburne engineering degree course at Bendigo. The equivalent of the first two years of the courses in manufacturing, mechanical and electrical engineering are currently available at Bendigo.

Students who complete these stages successfully are able to transfer to Swinburne with full credit. There is provision for students who commence their engineering studies at Bendigo to undertake the two six-month industrial experience components of their course in Bendigo.

**Women in Engineering**

Women are still a minority in engineering courses and the workforce. The Division of Science, Engineering and Design 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 maths/science 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 Divisional Office on 214 8510 or National Centre for Women on 214 8633.
Engineering courses

Advice to prospective students

Entry to first-year engineering degree

The common first year program is currently under review for 1995. Details of the revised first year will be supplied to students on enrolment.

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.

The program consists of eight semesters of academic tuition in the Higher Education Sector 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 Division of Science, Engineering and Design.

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 Head of the school concerned.

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.
• For full-time degree study
Satisfactory completion of a Certificate of Technology in an engineering field. Students will undertake classes with the students selected under the VCE Alternative Pathways Entry Scheme, but may be entitled to exemption from some of the engineering subjects. Eligibility for exemption will be considered on an individual basis depending upon the particular certificate.

• For part-time degree study
Satisfactory completion of a Certificate of Technology 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 Division of Science, Engineering and Design, 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.

Part-time
All engineering courses can be completed on a part-time basis although not all subjects are available as evening classes. Application for admission to part-time study in engineering courses must be made directly to Swinburne and not to VTAC. Application forms are available from the Information Office, telephone 214 8444.

The closing date is usually the middle of January.

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 214 8444.

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 214 8444.

The closing date for applications is January 13, 1995.

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 Swinburne Graduate Research School.

Enquiries regarding Masters programs by research should be directed to the Divisional Office 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 Divisional Board with regard to admission with advanced standing is set out in the following regulations:

1 General
1.1 The Divisional 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 Sector 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 of 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 engineering graduate diploma courses offered by the Division of Science, Engineering and Design, a student must complete at least fifty percent 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 Sector 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 Division of Science, Engineering and Design a student must complete as a minimum, an equivalent full-time year in the Division.

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 together with supporting documentation.

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 Division of Science, Engineering and Design.

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 division 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 will be expected to undertake some classes during the day. Enquiries regarding subjects available on a part-time basis should be directed to the Head of the relevant school.

Practical work

Practical work forms a significant part of most subjects in Engineering degree courses.

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 Division of Science, Engineering and Design. 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 confirmation of enrolment which is posted to them approximately four weeks after the commencement of each semester.

Students enrolled in subjects spread over both semesters, such as the majority of subjects in the common first-year of an engineering degree, should note that mid-year progress reports are displayed on divisional 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 thirteen weeks.

Assessment regulations

Please refer to page 213 for current assessment regulations.

Supplementary examinations

The Division of Science, Engineering and Design will operate a limited Supplementary Examination 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 Examination Program will embrace all undergraduate science and engineering subjects taught by the Division of Science, Engineering and Design. Entry to the program will be limited, will depend on overall performance and will not be automatically available.

Eligibility

All enrolments in the Supplementary Examination Program will be at the discretion of the Divisional Courses Committee which will take the advice of the school 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 Examination.

2. A Supplementary Examination in laboratory and projects components will not be available and therefore the student must have satisfied the practical laboratory and/or project requirements for any subject for which enrolment in the Supplementary Examination is being considered.

3. Subjects offered by other Divisions will be bound by the rules of those teaching Divisions.
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 Division 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 from certain subjects which reduces 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 School Head 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 Divisional Board.

If a School Head considers that a prima facie case for exclusion exists, the matter will be referred to the 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 Division regulations on suspension from courses, the School Head submits a case for the possible exclusion of a student to the Engineering Courses Committee.

2. If the 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 coopt representatives when hearing a case for exclusion.

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 Divisional 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 Sector 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 Divisional Board on the advice of the Head of the student's school.

(c) Students who discontinue study without permission and who later wish to renew their enrolment in the Higher Education Sector 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 Divisional Board on the advice of the Head 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 Head 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 Head 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.

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.

Additional grades, for which percentage scores are not applicable, may be awarded as a result of supplementary examinations. These are:

- SP Pass at supplementary assessment
- SN Fail at supplementary assessment
- SUP Supplementary assessment granted for this subject
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 Divisional office, or school offices. Students should note that they must obtain the approval of the Head of their awarding school before amending their enrolment.

Applicants 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 Head 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 Supplementary Passes will be admitted to a discipline but not necessarily that of their choice.

Leave of absence

Students who have enrolled in a course and wish to take leave of absence with a 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 Head of the school (or his/her nominee) or the Division. 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

(a) The Divisional 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 Courses Committee acting as a sub-committee of the Divisional Board.

(c) In special circumstances individual student subject results may be deferred on medical grounds or other reasons of hardship. The period of deferment is determined in the light of particular circumstances.

Awarding of degree with honours

Each year the 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
- Honours 3

Account will be taken of performance over the later years of the course. The proportion of final rankings allocated to each year will be as follows:

- 5th year 40%
- 4th year 30%
- 3rd year 30%

Overall, no more than approximately 40% of completing students will be awarded honours degrees, with approximately equal numbers in each category.

Only the first attempt at a subject will be taken into account in determining the weighted credit point score of a student for the purposes of the award of the honours degree.

Each school will submit ranking lists to the Courses Committee for its consideration.
Design

Campus changes
The Swinburne School of Design has relocated its activities to new accommodation on Swinburne Prahran campus at 144 High Street, Prahran. This relocation brings together superior facilities and studio accommodation for all students undertaking the programs.

Changes to School of Design Courses
The School of Design has introduced a Bachelor of Design and Bachelor of Design (Honours) course in 1994 for both Graphic Design and Industrial Design to replace the diploma and degree courses. The Bachelor of Design is a three year full-time degree course and the Bachelor of Design with Honours program is four years full-time study. Concurrent with the development of the new undergraduate courses, higher degree programs leading to masters qualifications by research and coursework are being developed and will be offered in 1995.

The subject codes and course structures in this handbook may change.

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: As per Graphic Design.

To qualify for the award of Bachelor of Design (Graphic Design) or Bachelor of Design (Industrial Design) a student must achieve a pass in all subjects.

To qualify for the award of Bachelor of Design with Honours, students must have successfully completed all subjects. Classification for Honours will be based on the results achieved.

A Divisional Pass may be awarded under exceptional circumstances. The School Board is the final authority for determining the results in any of the assessments for the School of Design. The Division of Science, Engineering and Design 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 assessment 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 Progress or Review Committee may preclude a student from further attendance, or the right to further assessment, if the lecturer responsible reports the student's attendance and participation 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
For Graphic Design applicants, VCE prerequisite studies:

English: grade average of C or better in Units 3 and 4.

Recommended subjects: Art or art related subjects.

For Industrial Design applicants, VCE prerequisite studies:

English: grade average of C or better in Units 3 and 4, 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.

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 Park Street, South Melbourne 3205, telephone 690 7977. Please refer to 'Application procedure', in the general section of this Handbook.

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.
Industry Based Learning (Cooperative education)

Bachelor of Applied Science

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 most of the undergraduate courses offered in the Division of Science, Engineering and Design is their IBL format. These courses include components of paid work experience which form an integral part of the education program.

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 under authentic conditions using theoretical concepts learnt in the classroom;
- students are able to sample particular areas of the chosen branch of their profession before graduation;
- industry based learning gained during the course is an advantage when graduates are seeking their first jobs.

Supervision
While in IBL students are supervised by their employers and a member of the Division's academic staff who acts as the student's industrial tutor.

Bachelor of Applied Science

Bachelor of Applied Science courses offered as four year programs in the Division of Science, Engineering and Design 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.

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 Division 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 Division will provide information on academic institutions capable of providing supervision of industrial placement in the home country.

Bachelor of Engineering

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, a building surveying degree or a bachelor of technology degree.

Placement of students
Students may take initiatives to secure their own job placements but before contacting a prospective employer a student must contact the 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 Head of School to reschedule the IBL components of the course.

Students without permanent resident status should be aware that while the Division 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 division will provide information on which academic institutions are able to provide supervision.

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 Division cooperates with the following universities in organising overseas placements:

- Cleveland State University
- Drexel University, Philadelphia, Pennsylvania
- University of Surrey, Guildford, England
- University of Coventry, England
- Bradford University, England

IBL graduates offer employers a competitive edge
Swinburne Higher Education Sector'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.
Recent surveys show that Swinburne Engineering graduates have the highest rate of employment after graduation of any Engineering schools within Victoria.

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 divisional 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 division staff;
- access to Swinburne's high technology facilities including computer links to international information banks.

For further information, contact the Administrator, Cooperative Placement Service.

Prizes and scholarships

Applied Science

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

Mooroolbark campus
A small number of scholarships, each to the value of $3000, will be awarded to outstanding first year Bachelor of Applied Science, Management Science and Computing students in 1995.

School of Chemical Sciences

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

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.

School of Computer Science and Engineering

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 to students with appropriate skills.

School Scholarship
This scheme provides a stipend of $10,000 p.a. In addition, a teaching assistantship may be negotiated up to an additional $5,100 p.a. 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. A number of prizes are currently available to Computer Science students:

Aspect Computing Prize
The amount of $1,000 will be awarded to a student in the final year of a computing degree course (not BIT) on the basis of results in second year computing subjects. The student should have completed IBL if they are undertaking a degree which has an IBL component. The School 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
The amount of $150 will be 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 subjects.

Ada Association Prize
The amount of $200 will be awarded to the student on the BAppSc (Computer Science and Software Engineering) who achieves the highest marks in unit SQ400 Concurrent Programming. This was awarded for the first time in 1992. The School nominates the best student.
Software Practice 1 Competition Prize
The amount of $100. All students in the subject 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.

Advanced Structural Methods
Undergraduate Software Engineering Award
The amount of $300 will be awarded to the most outstanding Computer Science and Software Engineering graduate.

Australian Business Consultants
Undergraduate Software Engineering Award
The award is based on assessment of undergraduate students’ software engineering capabilities.

Australian Business Consultants
Postgraduate Award
The award is based on assessment of postgraduate students’ software engineering capabilities.

Hewlett-Packard Australia Limited Prize
The amount of $200 will be awarded to a final year student on the basis of overall results in computing.

Hitachi Data Systems Quality Award
The amount of $300 will be awarded to a final year student on the basis of the best software quality performance in the final year project.

Darren Golden Memorial Prize
A cash prize from the Darren Golden Memorial Trust is awarded to the most outstanding student in the final two years of the Bachelor of Information Technology. The award is based primarily on academic merit but extra-curricular performance in areas such as leadership and contribution to course activities will be taken into account.

School of Mathematical Sciences
Graduate Research Scholarship
The amount of $15,500 will be awarded based on academic achievement consisting of a good honours degree and work experience.

The ASQR 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 the recommendation of the School of Mathematical Sciences.

School of Biophysical Sciences and Electrical Engineering
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 School. The value of the scholarship is determined by the Head of School. Scholarships may also be made available to international students engaged in full-time postgraduate research in an area of study relevant to the School.

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.

Kenneth Clarke Prize
Amount of $200 and plaque. The Kenneth Clarke prize is awarded to the best student in the final year of the Medical Biophysics and Instrumentation course based on the highest weighted average marks in final year. The award is sponsored by the School in recognition of Mr Kenneth Clarke, a former long service member of the Biophysics Advisory Committee.

SCAN
The amount of $200 and a plaque is awarded to the best student in the final year of Psychology/Psychophysiology course based on the highest weighted average marks in final year. The award is sponsored by the Swinburne Centre for Applied Neurosciences (SCAN), a research centre within the school.

Intergraph Award
Software from Intergraph Corporation valued in excess of $5000 and a plaque is awarded to the best student in the final year of Computing and Instrumentation course based on the highest weighted average marks in final year. The award is sponsored by Intergraph Corporation, a major supporter of our industry based learning program and employer of our graduates.

Engineering
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 214 8456.

Industry Based Learning scholarships
The Division of Science, Engineering and Design, 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 Divisional office by November for the forthcoming year.

W.P. Brown Medal
The award is a medal and a premium of $150. This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course.
The Cray Research Award

The amount of $450 will 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.

Esso Prize

A prize of $500 awarded annually to the outstanding final-year mechanical engineering student.

SECV Faraday Prizes

The amount of $500 will be 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).

F.W. 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

The award consists of $150 and an engraved pewter mug and is awarded to the best managed final year project in mechanical engineering.

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.

Oscar Weigel Exhibitions in Engineering

Value — up to $400 per year and tenable for a period not exceeding five years. 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.

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 School Head of each engineering school.

Professional recognition of courses

The Institution of Engineers, Australia

The courses (1990 syllabus) 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 Divisional 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.

Applied Science undergraduate course information

Student workload, credit points

The Division of Science, Engineering and Design 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 applied chemistry or 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 (conversion) 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 may be admitted directly into a special two year full-time conversion program available to such students. The associate diploma may 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 Division of Science, Engineering and Design. 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 Chemistry
- Applied and Industrial Mathematics
- Biochemistry
- Computer Science (conversion course)
- Computer Science and Psychology
- Computer Science and Software Engineering
- Computing and Instrumentation
- Environmental Health
- Management Science and Computing
- 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 chemistry with instrumentation, computing or mathematics are also offered on an individual basis, subject to each case in the approval of the Divisional Board.

* A co-major is offered by the Division of Science, Engineering and Design and Division of Business, Humanities and Social Science.

As some courses may have minor changes made in 1995 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.

ZO51 Applied Chemistry

VTAC Course Code: 34101

This program combines major studies in chemistry and applied science. Students who have completed an appropriate TAFE associate diploma at an acceptable level may be admitted directly into the second year of the course. The structures of courses are described below in the above order (alphabetical). Courses combining the single major chemistry with instrumentation, computing or mathematics are also offered on an individual basis, subject to each case in the approval of the Divisional Board.

* A co-major is offered by the Division of Science, Engineering and Design and Division of Business, Humanities and Social Science.

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Subject length

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Subject length

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

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* A co-major is offered by the Division of Science, Engineering and Design and Division of Business, Humanities and Social Science.

As some courses may have minor changes made in 1995 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.
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 mathematical modelling.

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 1995)

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 1995)

Units 3 and 4 — Mathematical Methods. Middle band selection — bonuses will be handled in the manner specified for the following studies: Specialist Mathematics (15%), Information Technology (Information Systems) (10%). Consideration will be given to the full range of an applicant's VCE studies and results; and level of performance in CATS in prerequisite studies; and to the student profile. 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)

Year 1

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</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 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>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>B5513</td>
<td>Business Studies-Accounting 10.0</td>
</tr>
<tr>
<td>SM180</td>
<td>Mathematics 1 10.0</td>
</tr>
<tr>
<td>SM288</td>
<td>Introduction to Operations Research 10.0</td>
</tr>
<tr>
<td>SQ204</td>
<td>Formal Methods 10.0</td>
</tr>
<tr>
<td>SQ210</td>
<td>Programming in C 10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ310</td>
<td>Advanced C Programming 10.0</td>
</tr>
<tr>
<td>Elective (mathematics or computer science) 10.0</td>
<td></td>
</tr>
</tbody>
</table>

Year 3

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

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM608</td>
<td>Industry Based Learning 50.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complementary studies elective 10.0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM608</td>
<td>Industry Based Learning 50.0</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 future years computational mathematics.

Details of these subjects with the exception of computational mathematics commence on page 260 of this Handbook. Some non-mathematics subjects may also be available as electives in years 3 and 4.

Changes to the syllabus may be made in 1995. 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></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM180</td>
<td>Mathematics 1</td>
<td>10.0</td>
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</table>

Year 2

<table>
<thead>
<tr>
<th>Year 2</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM381</td>
<td>Linear Algebra and Geometry</td>
<td>10.0</td>
</tr>
<tr>
<td>SM480</td>
<td>Analysis</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Year 3

<table>
<thead>
<tr>
<th>Year 3</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM581</td>
<td>Discrete Mathematics</td>
<td>10.0</td>
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</tbody>
</table>

Operations research subjects

<table>
<thead>
<tr>
<th>Year 1</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM288</td>
<td>Operations Research: An Introduction to Problem Solving</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Year 2</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM387</td>
<td>An Introduction to Optimisation</td>
<td>10.0</td>
</tr>
<tr>
<td>SM388</td>
<td>Forecasting and Regression</td>
<td>10.0</td>
</tr>
<tr>
<td>SM487</td>
<td>Queueing Theory and Simulation</td>
<td>10.0</td>
</tr>
<tr>
<td>SM488</td>
<td>Financial Modelling</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Year 3

<table>
<thead>
<tr>
<th>Year 3</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM587</td>
<td>Stochastic Models</td>
<td>10.0</td>
</tr>
<tr>
<td>SM588</td>
<td>Industrial Applications of Operations Research</td>
<td>10.0</td>
</tr>
<tr>
<td>SM687</td>
<td>Applications of Modelling</td>
<td>10.0</td>
</tr>
<tr>
<td>SM688</td>
<td>Mathematical Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>SM689</td>
<td>Decision Analysis</td>
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</tr>
</tbody>
</table>

Statistics subjects

<table>
<thead>
<tr>
<th>Year 1</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM185</td>
<td>Applied Statistics</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Year 2</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM388</td>
<td>Forecasting and Regression</td>
<td>10.0</td>
</tr>
<tr>
<td>SM484</td>
<td>Experimental Design and Multiple Regression</td>
<td>10.0</td>
</tr>
<tr>
<td>SM485</td>
<td>Distribution Theory and Estimation</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Year 3

<table>
<thead>
<tr>
<th>Year 3</th>
<th></th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM584</td>
<td>Multivariate Statistical Methods</td>
<td>10.0</td>
</tr>
<tr>
<td>SM585</td>
<td>Sample Survey Design</td>
<td>10.0</td>
</tr>
<tr>
<td>SM684</td>
<td>Time Series Analysis</td>
<td>10.0</td>
</tr>
</tbody>
</table>

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

Application procedure
See entry under 'Applied Science General Divisional information'.
Option
SC208 Biology OR 10.0
BS619 Business Studies OR 10.0
Other approved option

Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC318 Microbiology 3</td>
<td>7.5</td>
</tr>
<tr>
<td>SC370 Chemistry 3</td>
<td>15.0</td>
</tr>
<tr>
<td>SC372 Biochemistry 3</td>
<td>12.5</td>
</tr>
<tr>
<td>SC380 Practical Chemistry 3</td>
<td>7.5</td>
</tr>
<tr>
<td>SC390 Computers in Chemistry 3</td>
<td>7.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC418 Microbiology 4</td>
<td>7.5</td>
</tr>
<tr>
<td>SC470 Chemistry 4</td>
<td>15.0</td>
</tr>
<tr>
<td>SC472 Biochemistry 4</td>
<td>12.5</td>
</tr>
<tr>
<td>SC480 Practical Chemistry 4</td>
<td>7.5</td>
</tr>
<tr>
<td>SC490 Computers in Chemistry 4</td>
<td>7.5</td>
</tr>
</tbody>
</table>

* Details provided at time of enrolment.

Year 3

<table>
<thead>
<tr>
<th>Semester 1 (1990 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC508 Industry Based Learning</td>
<td>50.0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2 (1990 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC608 Industry Based Learning</td>
<td>50.0</td>
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</tbody>
</table>

Year 4

<table>
<thead>
<tr>
<th>Semester 1 (1990 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC504 Human Biochemistry</td>
<td>4.0</td>
</tr>
<tr>
<td>SC562 Analytical Biochemistry</td>
<td>6.0</td>
</tr>
<tr>
<td>SC565 Practical Biochemistry</td>
<td>10.0</td>
</tr>
<tr>
<td>SC570 Chemistry</td>
<td>15.0</td>
</tr>
<tr>
<td>SC580 Practical Chemistry</td>
<td>7.5</td>
</tr>
<tr>
<td>SC590 Computers in Chemistry</td>
<td>5.5</td>
</tr>
<tr>
<td>SC708 Scientific Communications</td>
<td>2.0</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2 (1990 syllabus)</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS619 Business and Management</td>
<td>10.0</td>
</tr>
<tr>
<td>SC604 Biotechnology</td>
<td>6.0</td>
</tr>
<tr>
<td>SC662 Analytical Biochemistry</td>
<td>4.0</td>
</tr>
<tr>
<td>SC665 Practical Biochemistry</td>
<td>7.5</td>
</tr>
<tr>
<td>SC670 Chemistry</td>
<td>10.0</td>
</tr>
<tr>
<td>SC680 Practical Chemistry</td>
<td>5.0</td>
</tr>
<tr>
<td>SC690 Computers in Chemistry</td>
<td>5.5</td>
</tr>
<tr>
<td>SC808 Scientific Communications</td>
<td>2.0</td>
</tr>
</tbody>
</table>

ICl 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 Divisional information — Applied Science'.

ZO60 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 (1994 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 credit points so that a standard program comprises five equally weighted subjects per semester. However, subjects in mathematics vary between 7.5, 10 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. An elective may be omitted in the final year if enough points are gained in the minor.

Year 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<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 OR</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ116 Communication and Learning Skills</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180 Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SM185 Applied Statistics</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ310 Advanced C Programming or elective</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ412 Systems Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ407 Data Communications</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180 Mathematics OR</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180B Mathematics</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180B Elective-minor2</td>
<td>10.0</td>
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</tbody>
</table>

Year 3

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ533 Team Project</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ606 Computing in the Human Context</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ306 Computer Science elective OR SQ305 Elective</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ533 Team Project</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ306 Human Computer Interaction</td>
<td>10.0</td>
</tr>
<tr>
<td>Team Project Elective-minor4</td>
<td>10.0</td>
</tr>
</tbody>
</table>

(Computer Science major subjects-120 credit points.)
Computer Science Electives
Electives in computer science depend upon demand and available 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 Divisional Information — Applied Science'.

Computer Science and Psychology

VTAC Course Code-35357
This program comprises major studies in computer science and psychology. The psychology major gives students a broad introduction to psychology, but with an emphasis on applied aspects of the discipline and on the development of skills in research design, statistical analysis and computer usage. Graduates of the course will be able to proceed to accredited fourth year programs in psychology. In the computer science major, students learn the principles of computer operation and are introduced to the specification and development of computer programs to solve mathematical, scientific and business oriented problems. Modern software engineering methods and tools are studied, and subjects in human computer interaction and artificial intelligence are included: areas of the discipline with a substantial interaction with psychology.

Prerequisites
Units Three and Four: Mathematical Methods. Middle band selection: bonuses will apply for Specialist Mathematics and Information Technology (Information Systems). Consideration will be given to the full range of an applicant's VCE studies and results, to the level of performance in CATS, in prerequisite studies and to the student profile. Applicants who do not satisfy the above requirements may be selected after consideration of their employment and educational background, particularly in the prerequisite mathematics. Such special entry is not available to applicants who have, within the last three years, failed any of the formal entry assessments. As a rule, the number of special entry scheme admissions does not exceed 10% of the new intake in any year.

Course structure
(1995 syllabus, subject to accreditation)

Full-time course

Year 1

Semester 1
AY100M Psychology 100M
SM1210 Mathematics
SQ110 Computer Problem Solving
SQ117 Introduction to Computer Systems

Semester 2
AY101M Psychology 101M
SM1210 Mathematics
SQ210 Programming in C
SQ204 Formal Methods

Year 2

Semester 1
AY203 Developmental Psychology
SM278 Design and Measurement 2A
SQ310 Advanced C
SQ314 Software Engineering/Systems Analysis

Semester 2
AY202 Cognition and Human Performance
AY204 Social Psychology
SQ305 Database
SQ419 Artificial Intelligence

Year 3

Semester 1
AY312 The Psychology of Personality
SM378 Design and Measurement 3A
SQ306 Human Computer Interaction
SQ604 Object Oriented Programming

Semester 2
AY319 Psychological Measurement
AY320 Psychological Foundations of Counselling
SQ407 Data Communications
SQ412 Systems Programming
SQ633 Computer Science Team Project

Note: In addition, all students undertake a Communication and Learning Skills subject during the first year of the course.

Industry based learning
Two semesters of industry based learning may be available before students do their final year.

Honours program
Students who achieve a high standard during the course may be invited to participate in an honours year.

Multimodal learning
Many of the computing subjects in the program are studied in a form known as multimodal learning (MML). This method of learning is based on extensive use of computers and associated communication and media technology.

Application procedure
See entry under 'General Divisional Information — Applied Science'.

Computer Science and Software Engineering

VTAC Course Code-34438
This program provides an extensive education in contemporary approaches to the analysis, design and implementation of large scale computer systems. The course covers computer science, software engineering, and software practice. Computer science is the core content of the program and includes the study of programming methodologies, datastructures 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, interpersonal 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 page 235.

**Professional recognition**

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

**Prerequisites (entrance 1995)**

Units 3 and 4: A grade average of D in Mathematical Methods. Middle band selection: Bonus points will be awarded for Information Technology (Information Systems)(10%) and Specialist Mathematics (15%). 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)

**Year 1**

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

**Year 2**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Data Structures and Algorithms</th>
<th>Software Engineering</th>
<th>Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ304</td>
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<td></td>
<td></td>
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<tr>
<td>SQ305</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Systems Analysis</th>
<th>Operating Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ404</td>
<td>Minor or SQ402</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Human Computer Interaction</th>
<th>Computer Science Team Project</th>
<th>Data Communications</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ306</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ403</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ407</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Year 3**

<table>
<thead>
<tr>
<th>IBL Semester 1</th>
<th>Industry Based Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ523</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IBL Semester 2</th>
<th>Industry Based Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ623</td>
<td></td>
</tr>
</tbody>
</table>

**Year 4**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Computing in the Human Context</th>
<th>Elective or Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ606</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Software Practice 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ503</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Object-oriented Programming</th>
<th>Elective or Minor</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ604</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Software Practice 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ503</td>
<td></td>
</tr>
</tbody>
</table>

**Computer science elective subjects available:**


**Application procedure**

See entry under 'General Divisional information — Applied Science'.

**VTAC Course Code-34486**

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 3 and 4: Physics, Mathematical Methods. Middle band selection — bonuses will be handled in the manner specified for the following studies: Specialist Mathematics (15%). Information Technology (Information Systems)(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)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td></td>
</tr>
<tr>
<td>SM1200  Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SP1210  Intro. to Scientific Instrumentation 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SP1200  Physics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ117  Intro. to Computer Systems</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ120  Programming in C#</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td></td>
</tr>
<tr>
<td>SM1200  Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SP1200  Physics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SP1210  Intro. to Scientific Instrumentation 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ120  Programming in C</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ207  Computer Organisation</td>
<td>10.0</td>
</tr>
</tbody>
</table>

| Year 2 | |
|--------| |
| **Semester 3** | |
| SM3400  Mathematics 2 | 8.0 |
| SP3400  Physics 2 | 10.0 |
| SP3410  Analogue and Optical Techniques | 6.0 |
| SP3430  Interfacing and Nuclear Techniques | 6.0 |
| SQ310  Data Structures and Algorithms | 10.0 |
| SQ305  Database | 10.0 |
| **Semester 2** | |
| SM3400  Mathematics 2 | 8.0 |
| SP3400  Physics 2 | 10.0 |
| SP3410  Analogue and Optical Techniques | 6.0 |
| SP3430  Interfacing and Nuclear Techniques | 6.0 |
| SQ407  Data Communications | 10.0 |
| SQ305  Database | 10.0 |

| Year 3 | |
|--------| |
| **Semester 1** | |
| SP523  Industry Based Learning | 50.0 |
| **Semester 2** | |
| SP623  Industry Based Learning | 50.0 |

| Year 4 | |
|--------| |
| **Semester 1** | |
| SP501  Signals and Systems | 8.0 |
| SP510  Scientific Instrumentation A | 10.0 |
| SP530  Scientific Instrumentation B | 10.0 |
| SQ314  Software Engineering and Systems Analysis | 10.0 |
| SQ305  Database | 10.0 |
| **Semester 2** | |
| SP601  Stand-alone Instrumentation | 4.0 |
| SP610  Instrumentation Systems A | 8.0 |
| SP630  Instrumentation Systems B | 10.0 |
| SQ613  Computer Science Team Project | 10.0 |
| SQ310  Database | 10.0 |

Students who have achieved a grade average of C in VCE Information Technology (Informed Systems) or equivalent may replace SQ120 by SQ210 in semester 1, and may take SQ310 in semester 2. Such students should then take an additional Computer Science elective in Years 2 and 3.

**Application procedure**

See entry under 'General Divisional information — Applied Science'

**Environmental Health**

VTAC Course Code-34259

This is the statutory qualifying course for environmental 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 in 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 1995)**

Units 3 and 4: Mathematical Methods plus one of Biology, Chemistry or Physics.

**Course structure**

**Full-time course**

(1991 syllabus)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td></td>
</tr>
<tr>
<td>AB2100  Behavioural Studies and Communication (1)</td>
<td>5.0</td>
</tr>
<tr>
<td>MP107  Engineering Drawing</td>
<td>5.0</td>
</tr>
<tr>
<td>SC100  Environmental Health</td>
<td>5.0</td>
</tr>
<tr>
<td>SC109  Biology</td>
<td>10.0</td>
</tr>
<tr>
<td>SC1500  Introductory Chemistry</td>
<td>10.0</td>
</tr>
<tr>
<td>SM110  Mathematical Methods</td>
<td>10.0</td>
</tr>
<tr>
<td>SP108  Physics</td>
<td>10.0</td>
</tr>
</tbody>
</table>
Semester 2
BS141  Introductory Law
SC252  Biological Chemistry
SC209  Biology
SK2100 Computer Science
SM2100 Applied Statistics
SP236  Physics

Year 2
Semester 3
AB310  Behavioural Studies and Communication (2)
BS2530 Environmental Health Law
CS249  Microbiology
ME249 Environmental Engineering
SA203  Building Standards
SC3400 Food Processing and Analysis

Semester 2
BS2540 Legal Procedure and Evidence
SC451  Food Microbiology
SC467  Environmental Health Practice (1)
SC468  Environmental Science
SC469  Epidemiology

Year 3
Semester 1
SA508  Industry Based Learning
SA608  Industry Based Learning

Semester 2
BS428  Administration and Management
SC569  Urban Ecology
SC667  Environmental Health Practice (3)
SC609  Health Promotion
SC668  Research Project
SP4190 Occupational Hygiene and Safety

Application procedure
See entry under 'General Divisional Information — Applied Science'.

Year 4
Semester 1
BS447  Administrative Law
CE560  Environmental Engineering and Planning
SC509  Research Skills
SC567  Environmental Health Practice (2)
SC568  Applied Food Science and Inspection
SC661  Environmental Analysis and Control

Semester 2
BS428  Administration and Management
SC569  Urban Ecology
SC667  Environmental Health Practice (3)
SC609  Health Promotion
SC668  Research Project
SP4190 Occupational Hygiene and Safety

Division of Science
Management Science and Computing
VTAC Course Code-35453

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 (Hawthorn campus only)
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 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 1995)
Units 1 and 2: four units of mathematics. (Only until 1996).
Units 3 and 4 — Mathematical Methods. Middle band selection — bonuses will be handled in the manner specified for the following studies: Specialist Mathematics (15%). Information Technology (Information Systems)(10%).
Consideration will be given to the full range of an applicant's VCE studies and results, and the level of performance in CATS in prerequisite studies, and to the student profile.
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 (1993 syllabus)

**Year 1**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM131 Communication Skills</td>
<td>10.0</td>
</tr>
<tr>
<td>SM180 Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SM185 Applied Statistics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ110 Computer Problem Solving</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ117 Introduction to Computer Systems</td>
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**Year 2**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS513 Business Studies - Accounting</td>
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</tr>
<tr>
<td>SM180 Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SM288 Operations Research</td>
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</tr>
<tr>
<td>SQ204 Formal Methods</td>
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<tr>
<td>SQ210 Programming in C</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
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</thead>
<tbody>
<tr>
<td>SM404 Project Management A</td>
<td>10.0</td>
</tr>
<tr>
<td>SM387 Introduction to Optimisation</td>
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<tr>
<td>SQ484 Experimental Design and Multiple Regression</td>
<td>10.0</td>
</tr>
<tr>
<td>SQ407 Data Communications 1</td>
<td>10.0</td>
</tr>
<tr>
<td>Computer Science elective 1</td>
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</table>

**Year 3**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM584 Multivariate Statistical Methods 1</td>
<td>10.0</td>
</tr>
<tr>
<td>SM487 Queueing Theory and Simulation</td>
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</tr>
<tr>
<td>SM609 Computer Science Elective 2</td>
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<tr>
<td>Computer Science Elective 3</td>
<td>10.0</td>
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<tr>
<td>CR</td>
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<tr>
<td>SQ613 Computer Science</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM608 Industry Based Learning</td>
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**Year 4**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Creditpoints</th>
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<tbody>
<tr>
<td>SM708 Industry Based Learning</td>
<td>50.0</td>
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<tr>
<td>SM588 Mathematical Programming</td>
<td>10.0</td>
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<tr>
<td>SM688 Computer Science Elective 4</td>
<td>10.0</td>
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<tr>
<td>Computer Science Elective 5</td>
<td>10.0</td>
</tr>
<tr>
<td>SM609 Team Project in either Mathematics</td>
<td>10.0</td>
</tr>
<tr>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>SQ613 Computer Science</td>
<td></td>
</tr>
</tbody>
</table>

Note: From second year onwards the actual subjects taken in mathematics and as computer science electives may vary and will be selected from a range of subjects. Details of these subjects can be obtained at enrolment.

### Application procedure

See entry under 'General Divisional information — Applied Science'.

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**Mathematics and Computer Science**

**VTAC Course Code-34299**

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 (Hawthorn campus only)**

Suitably qualified candidates may be admitted to an honours year.

**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 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 1995)**

Units 1 and 2: four units of mathematics. (Only until 1996).
Units 3 and 4 — Mathematical Methods. Middle band selection — bonuses will be handled in the manner specified for the following studies: Specialist Mathematics (15%). Information Technology (Information Systems) (10%).
Consideration will be given to the full range of an applicant's VCE studies and results, and the level of performance in CATS in prerequisite studies, and to the student profile.
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 enrolled in 1995 at any stage will complete the 1993 syllabus.

Course structure (1993 syllabus)

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SM131 Communication Skills</td>
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</tr>
<tr>
<td></td>
<td>SM180 'Mathematics 1'</td>
<td>10.0</td>
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<tr>
<td></td>
<td>SM185 Applied Statistics 1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ110 Introduction to Computer Systems</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ117 Introduction to Computer Systems</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>BS513 Business Studies-Accounting</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM180 Mathematics 1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM288 Operations Research</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ204 Formal Methods</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ210 Programming in C</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>SM383 Mathematics 2</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM388 Forecasting and Regression</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ310 Advanced C Programming</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ305 Database</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ314 Software Engineering/Systems Analysis</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM404 Project Management A</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM387 Introduction to Optimisation</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM484 Experimental Design and Multiple Regression</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SQ407 Data Communications 1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science elective 1</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>SM584 Multivariate Statistical Methods 1</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM487 Queueing Theory and Simulation</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective 2</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective 3</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM609 Team Project in either Mathematics</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ613 Computer Science</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM608 Industry Based Learning</td>
<td>50.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>SM708 Industry Based Learning</td>
<td>50.0</td>
</tr>
<tr>
<td></td>
<td>SM588 Industrial Applications of Operations Research</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM688 Mathematical Programming</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective 4</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>Computer Science Elective 5</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>SM609 Team Project in either Mathematics</td>
<td>10.0</td>
</tr>
<tr>
<td></td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SQ613 Computer Science (which ever was not taken in Year 3, semester 1)</td>
<td>10.0</td>
</tr>
</tbody>
</table>

Note: From second year onwards the actual subjects taken in mathematics and as computer science electives may vary and will be selected from a range of subjects. Details of these subjects can be obtained at enrolment.

Application procedure
See entry under 'General Divisional Information — Applied Science'.

ZO61 Medical Biophysics and Instrumentation

VTAC Course Code-34237

This program is unique to Swinburne and combines major studies in medical biophysics with scientific instrumentation. It is designed to produce technology 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 1995)
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)

Year 1
Semester 1
SC154P/SC127 Chemistry* SP1209 Physics SP1210 Introduction to Instrumentation SP1225 Introductory Biophysics SM1215 Mathematical Methods
Semester 2
SK290 Computer Science SM1215 Mathematical Methods SP1209 Physics SP1210 Introduction to Instrumentation SP1225 Introductory Biophysics
Year 2
Semester 1
SP324 Biophysical Systems A SP325 Biophysical Systems B SM3415 Mathematical Methods SP3409 Physics 3-4 SP3410 Analogue and Optical Techniques SP3430 Interfacing and Nuclear Techniques
Semester 2
SM3415 Mathematical Methods SP3409 Physics 3-4 SP3410 Analogue and Optical Techniques SP3430 Interfacing and Nuclear Techniques SP401 Experimental Techniques SP424 Clinical Monitoring A SP425 Clinical Monitoring B
Year 3
Semester 1
SP222 Industry Based Learning
Semester 2
SP333 Industry Based Learning
Year 4
Semester 1
SP501 Signals and Systems SP510 Scientific Instrumentation A SP530 Scientific Instrumentation B SP524 Biophysics (Neurosciences A) SP525 Applied Biophysics A SP5609 Physics 5-6
Semester 2
SP5609 Physics 5-6 SP602 Special Project SP610 Instrumentation Systems A SP624 Biophysics (Neurosciences B) SP625 Applied Biophysics B SP626 Applied Neurosciences SP630 Instrumentation Systems B
* Students with Year 12 Chemistry do SC154P. Students without Year 12 Chemistry do SC127.

Application procedure
See entry under 'General Divisional Information — Applied Science'.

ZO62
Psychology and Psychophysiology

VTAC Course Code-34145
This program is unique to Swinburne and combines major studies in psychology and psychophysiology. 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.

Psychophysiology 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, Alzheimer's 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 Division of Science, Engineering and Design or the Division of Business, Humanities and Social Science 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, Division of Business, Humanities and Social Science chapter.

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 neuro-logical 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 1995)
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 as technical background, employment and, in some cases, an interview.
**Course structure**

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

**Year 1**

**Semester 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY100 Psychology</td>
<td>12.5</td>
</tr>
<tr>
<td>SP132 Introductory Psychophysiology</td>
<td>12.5</td>
</tr>
<tr>
<td>SM106 Monitoring Instrumentation</td>
<td>10.0</td>
</tr>
<tr>
<td>SC133t Chemistry</td>
<td>7.5</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY101 Psychology</td>
<td>12.5</td>
</tr>
<tr>
<td>SP231 Monitoring Technology</td>
<td>10.0</td>
</tr>
<tr>
<td>SP233 Psychophysiological Systems</td>
<td>19.0</td>
</tr>
<tr>
<td>SK290 Computer Science</td>
<td>8.5</td>
</tr>
</tbody>
</table>

**Year 2**

**Semester 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY203 Development Psychology</td>
<td>16.5</td>
</tr>
<tr>
<td>SM278 Design and Measurement 2A</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY202 Cognition and Human Performance</td>
<td>16.5</td>
</tr>
<tr>
<td>AY204 Social Psychology</td>
<td>16.5</td>
</tr>
<tr>
<td>SP431 Psychophysiology of Perception</td>
<td>17.0</td>
</tr>
</tbody>
</table>

**Year 3**

**Semester 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY313 The Psychology of Personalty</td>
<td>16.5</td>
</tr>
<tr>
<td>BS251 Psychological Measurement</td>
<td>12.5</td>
</tr>
<tr>
<td>SP527 Neurophysiology of the Normal Brain</td>
<td>12.5</td>
</tr>
<tr>
<td>SP528 Higher Cortical Function</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY312 Cognition and Human Performance</td>
<td>16.5</td>
</tr>
<tr>
<td>AY322 Neurophysiology of Mental Disorders</td>
<td>12.5</td>
</tr>
<tr>
<td>SP631 Psychophysiology of Perception</td>
<td>12.5</td>
</tr>
</tbody>
</table>

* Students who have Units 3 and 4 Chemistry do SC133t, otherwise do SC133.

**Application procedure**

See entry under ‘General Divisional information — Applied Science’.

**Bachelor of Information Technology**

VTAC Course Code-34315

Manager

G.A. Murphy BCom(Melb), CPA

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 $9,000.

**Career potential**

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

**Prerequisites (entrance 1995)**

Units 3 and 4: English, Mathematics (any).

**Segment 1**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT101 Computer Fundamentals</td>
<td>10.0</td>
</tr>
<tr>
<td>IT102 Introduction to Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>IT103 Business Applications and Systems 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT105 Behaviour and Communications in Organisations</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC110 Accounting 1</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Segment 2**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT201 Decision Analysis</td>
<td>10.0</td>
</tr>
<tr>
<td>IT202 COBOL Programming</td>
<td>10.0</td>
</tr>
<tr>
<td>IT203 Business Applications and Systems 2</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT204 Business Applications and Systems 2</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Segment 3 (Summer Term)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT301 Systems Software 1</td>
<td>16.5</td>
</tr>
<tr>
<td>IT302 Organisation Behaviour</td>
<td>17.0</td>
</tr>
<tr>
<td>IT303 Data Base Management Systems 1</td>
<td>16.5</td>
</tr>
</tbody>
</table>

**Segment 4**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT401 Industry Based Learning</td>
<td>50.0</td>
</tr>
</tbody>
</table>

**Segments 5 and 6**

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

**Core subjects**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT501 Systems and Information Analysis 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT503 Data Base Management Systems 2</td>
<td>10.0</td>
</tr>
<tr>
<td>IT504 Data Communications 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT509 Software Engineering 1</td>
<td>10.0</td>
</tr>
<tr>
<td>IT601 Systems and Information Analysis 2</td>
<td>10.0</td>
</tr>
<tr>
<td>IT609 Software Engineering 2</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Specialist subjects**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT502 Systems Software 2</td>
<td>10.0</td>
</tr>
<tr>
<td>IT603 Data Base Management Systems 3</td>
<td>10.0</td>
</tr>
</tbody>
</table>

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

**Segment 7**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT701 Industry Based Learning</td>
<td>50.0</td>
</tr>
</tbody>
</table>

**Segment 8 (Summer Term)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT803 Emerging Information Technologies</td>
<td>25.0</td>
</tr>
<tr>
<td>IT804 Computing in the Human Context</td>
<td>25.0</td>
</tr>
</tbody>
</table>

* All subjects will not be offered each semester.

**Application procedure**

See entry under ‘General Divisional information — Applied Science’.

**Regulations**

The Course Regulations are available from the School of Computer Science and Software Engineering and each student will receive a copy at the beginning of the course.
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 subjects. 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 subjects, one reading subject, and a research topic leading to the production of a minor thesis. The reading subject 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 subjects will consist of at least two subjects at the masters by coursework or honours level and at most one subject at the third year undergraduate level which has not been attempted previously. Normally at least two of the course subjects will be from computer science masters and honours subjects, which are listed below:

**Coursework subjects**

<table>
<thead>
<tr>
<th>Compulsory subjects</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ903 Honours Reading Unit</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ913 Honours Research Project</td>
<td>50.0</td>
</tr>
<tr>
<td>Plus three of the following:</td>
<td></td>
</tr>
<tr>
<td>SQ904 The Software Process</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ906 Human-Computer Interaction</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ908 Honours Computer Graphics</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ909 Foundations of Intelligent Systems</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ914 Systems Analysis</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ916 Programming the User Interface</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ924 Object-Oriented Design and Programming</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ926 Interactive Systems Development</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ929 Adaptive Intelligent Systems</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ934 Real-Time Systems</td>
<td>12.5</td>
</tr>
<tr>
<td>SQ944 Advanced Database Technology</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**Application procedure**

See entry under ‘General Divisional information — Applied Science’.

Honours Year in Medical Biophysics

See 2079.

Honours Year in Scientific Instrumentation

See 2079.

Honours Year in Medical Biophysics and Scientific Instrumentation

See 2079.

Honours Year in Psychophysiology

These four programs provide opportunities for selected students, who have achieved a high standard in the major areas of study, medical biophysics, psychophysiology 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 four available programs.

**Topics in the medical biophysics program** include: membrane biophysics, biophysical techniques, information processing within neural systems, clinical, cortical, subcortical, and EEG/ scalp 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 subjects, students must complete a minimum of four subjects. These are selected from subjects offered by the School in consultation with the postgraduate coordinator. Subject to approval, one subject of equivalent standard from another School may be chosen.

**Course structure**

**Full-time course**

<table>
<thead>
<tr>
<th>(1993 syllabus)</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1 (6 subjects and minor project)</td>
<td></td>
</tr>
</tbody>
</table>

**Medical biophysics subjects:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP711 Biosensors and Membranes</td>
<td>12.5</td>
</tr>
<tr>
<td>SP713 Cognitive Neuroscience Methodologies</td>
<td>12.5</td>
</tr>
<tr>
<td>SP715 Exercise Physiology</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**Scientific instrumentation subjects:**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP751 Neural Network Applications</td>
<td>12.5</td>
</tr>
<tr>
<td>SP752 Advanced Instrument Electronics</td>
<td>12.5</td>
</tr>
<tr>
<td>SP753 Optical Instrumentation</td>
<td>12.5</td>
</tr>
<tr>
<td>SP754 Microcontroller Design Techniques</td>
<td>12.5</td>
</tr>
<tr>
<td>SP755 Nuclear Instrumentation</td>
<td>12.5</td>
</tr>
<tr>
<td>SP756 Advanced Instrumentation</td>
<td>12.5</td>
</tr>
<tr>
<td>SP722 Minor Project</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**Semester 2**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP822 Major Project</td>
<td>50.0</td>
</tr>
</tbody>
</table>

For more information please contact the School of Chemical Sciences for more detailed information.

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 School of Chemical Sciences.
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 PhD postgraduate degree.

The course requires one academic year of full-time students 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>Creditpoints</th>
<th>Introduction to Research Skills</th>
<th>no formal credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM700</td>
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<td>Reading Program</td>
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<td></td>
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<td>Course Work Subject</td>
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</tr>
<tr>
<td>SM711</td>
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<td>Research Project</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Course Work Subject</td>
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</tr>
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<td></td>
<td></td>
<td>Research Project</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Creditpoints</th>
</tr>
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<tbody>
<tr>
<td>SM711</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Introduction to Research Skills

At the beginning of first semester, students will undertake a short course in research techniques including skills needed for the minor thesis. This will not be formally assessed.

Reading program

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 School of Mathematical Sciences 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 School of Mathematical Sciences 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 School of Mathematical Sciences 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.

<table>
<thead>
<tr>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM703</td>
</tr>
<tr>
<td>SM704</td>
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<td>SM705</td>
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<tr>
<td>SM707</td>
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<tr>
<td>SM709</td>
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<table>
<thead>
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<th>Creditpoints</th>
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<tbody>
<tr>
<td>SM744</td>
</tr>
<tr>
<td>SM746</td>
</tr>
<tr>
<td>SM747</td>
</tr>
<tr>
<td>SM752</td>
</tr>
</tbody>
</table>

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 may allow scope for the demonstration of original thought. Projects in association with industry will be encouraged. Joint supervision with industry representatives is anticipated in such projects. The minor thesis normally would not exceed 15,000 words, and publication of results is encouraged.

Honours Program in Biochemistry

This program provides an opportunity for selected students, who have achieved a high standard during the biochemistry course, to graduate with a degree with honours.

For more information please contact the School of Chemical Sciences.

Honours Program in Applied Chemistry

This program provides an opportunity for selected students, who have achieved a high standard during the applied chemistry course, to graduate with a degree with honours.

For more information please contact the School of Chemical Sciences.

Engineering Undergraduate Course Information

Bachelor of Technology

The Bachelor of Technology offers a new kind of degree in the exciting areas of technological need, and a new entry scheme to provide access to students who may have otherwise closed the door to careers in these areas.
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 Division of Science, Engineering and Design 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 course 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.

Industry based learning

As with all undergraduate courses within the Division of Science, Engineering and Design, 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.

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.

C050 Bachelor of Engineering (Civil)

Bachelor of Engineering courses are currently under review.

The following course is the 1990 syllabus. It is anticipated that a modified course will be introduced for commencement in 1995. Details of this modified course will be supplied to students at enrolment.

Bachelor of Engineering 1995 syllabus course

This program will extend over eight academic semesters plus two semesters of industry-based learning.

This course of study is undertaken by an industry based learning (cooperative) program extending over seven academic semesters plus 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.

**Degree course revision**

Students entering the first year of the Civil Engineering course will be enrolled in the common first year, and will follow the Bachelor of Engineering (Civil) 1990 syllabus.

**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.

In the third and fourth years, 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>Sem 1</th>
<th>Hours per week</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE116</td>
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<td>Engineering — Solid Mechanics 3</td>
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<tr>
<td>EE181</td>
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<td>Engineering — Electronics and Computing 4</td>
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<td>MM121</td>
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<td>Engineering — Energy Systems 2</td>
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<tr>
<td>MM122</td>
<td></td>
<td>Engineering — Chemistry and Materials 3</td>
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</tr>
<tr>
<td>MM123</td>
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<td>Engineering — Graphics and CAD 2.5</td>
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<td>MF180</td>
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<td>Engineering — Physics 2.5</td>
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<td>MF190</td>
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<tr>
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<table>
<thead>
<tr>
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<th>Hours per week</th>
<th>Sem 2</th>
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<tr>
<td>CE231</td>
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<td>Hydraulics 3</td>
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<tr>
<td>CE241</td>
<td></td>
<td>Surveying 3</td>
<td>3</td>
</tr>
<tr>
<td>CE255</td>
<td></td>
<td>Structural Design 3</td>
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</tr>
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<td>CE261</td>
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<td>Road Engineering 3</td>
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<td>Geomechanics 4</td>
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<tr>
<td>SM293</td>
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<td>Engineering Mathematics 24 + 5 weeks</td>
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<th>Hours per week</th>
<th>Sem 2</th>
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<td>CE301</td>
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<td>Engineering Computing 2</td>
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</tr>
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<tr>
<td>CE324</td>
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<td>Urban Planning 3</td>
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<td>CE331</td>
<td></td>
<td>Water Engineering 4</td>
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<tr>
<td>CE397</td>
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**CE355 Structural Engineering**

<table>
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<tr>
<th>Year 4</th>
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<tbody>
<tr>
<td>CE415</td>
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<td>CE431</td>
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<td>Water Engineering 2</td>
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<tr>
<td>CE461</td>
<td></td>
<td>Transport Engineering 3</td>
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<tr>
<td>CE481</td>
<td></td>
<td>Geomechanics 3</td>
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<td>CE495</td>
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<td>Engineering Management 3</td>
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<tr>
<td>SM493</td>
<td></td>
<td>Engineering Mathematics 2</td>
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</table>

**Electives (choose one)**

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<tr>
<th>Year 4</th>
<th>Sem 1</th>
<th>Sem 2</th>
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<tbody>
<tr>
<td>CE406</td>
<td></td>
<td>Water and Transport Engineering 4</td>
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<tr>
<td>CE416</td>
<td></td>
<td>Structural Engineering 5</td>
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<tr>
<td>CE476</td>
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<td>Construction Engineering 5</td>
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<tr>
<td>CE494</td>
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<td>Industry Based Learning 24 weeks</td>
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</table>

<table>
<thead>
<tr>
<th>Year 5</th>
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<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE505</td>
<td></td>
<td>Investigation Project 4 + 2 weeks</td>
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<tr>
<td>CE555</td>
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<td>Design 5 + 3 weeks</td>
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<tr>
<td>CE596</td>
<td></td>
<td>Engineering Management 5</td>
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</table>

**Major Electives (choose one)**

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE507</td>
<td></td>
<td>Municipal Transport Engineering 5</td>
</tr>
<tr>
<td>CE516</td>
<td></td>
<td>Structural Engineering 5</td>
</tr>
<tr>
<td>CE576</td>
<td></td>
<td>Construction Engineering 5</td>
</tr>
<tr>
<td>CE533</td>
<td></td>
<td>Water Engineering 3</td>
</tr>
<tr>
<td>CE553</td>
<td></td>
<td>Structural Design 3</td>
</tr>
<tr>
<td>CE582</td>
<td></td>
<td>Geomechanics 3</td>
</tr>
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</table>

**** Approved alternative from Arts or Business

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Sem 1</th>
<th>Sem 2</th>
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</thead>
<tbody>
<tr>
<td>COS51</td>
<td></td>
<td>Bachelor of Technology (Building Surveying)</td>
</tr>
<tr>
<td>CM506</td>
<td></td>
<td>Investigation Project 55 + 2 weeks</td>
</tr>
<tr>
<td>CM556</td>
<td></td>
<td>Civil Design 60 + 2 weeks</td>
</tr>
</tbody>
</table>

**VTAC Course Code-34350**

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 teaching input from a number of schools.
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 acts 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 recommended 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.

Persons 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</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem 1</td>
</tr>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>CE114</td>
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<td>CE173</td>
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<td>5</td>
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</tr>
<tr>
<td>6</td>
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</tbody>
</table>

*Part-time students may undertake these subjects in their component parts — see subject outline for details.

Bachelor of Engineering

(Electrical Power and Control, Communication and Electronic, Computer Systems)

Bachelor of Engineering courses are currently under review

The following course is the 1990 syllabus. It is anticipated that a modified course will be introduced for commencement in 1995. Details of this modified course will be supplied to students at enrolment.

Bachelor of Engineering 1995 syllabus course

This program will extend over eight academic semesters plus two semesters of industry based learning.
**Degree course revision**

Students entering the first year of the electrical engineering program will be enrolled in the common first year, and will follow the Bachelor of Engineering (Computer Systems) (Electrical Power and Control) and (Communication and Electronic).

**Course structure (1990 Syllabus)**

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>First year (E050)</th>
<th>Sem 1</th>
<th>Sem 2</th>
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<tbody>
<tr>
<td></td>
<td>CE116</td>
<td>3</td>
<td>3</td>
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<tr>
<td></td>
<td>MM121</td>
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<table>
<thead>
<tr>
<th>Hours per week</th>
<th>Second year (E050) (unstreamed)</th>
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<th>Sem 2</th>
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<table>
<thead>
<tr>
<th>Hours per week</th>
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<th>Sem 2</th>
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<td></td>
<td>EE459 Electrical Design 3</td>
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<td></td>
<td>EE465 Engineering Systems Software 3*</td>
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<td>EE475 Electrical Power and Machines 5</td>
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<td></td>
<td>EE476 Electronics 3</td>
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**Electrical Power and Control Engineering Stream (E050)**

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<td></td>
<td>EE458 Electrical Design 3</td>
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<td>EE465 Engineering Systems Software 3*</td>
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<td>SM494 Engineering Mathematics 2*</td>
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**Communication and Electronic Engineering (E050)**

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<th>Sem 1</th>
<th>Sem 2</th>
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<td></td>
<td>EE556</td>
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**Computer Systems Stream (E050)**

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<tr>
<td></td>
<td>EE502 Management Practice 1 3*</td>
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<tr>
<td></td>
<td>EE556 Project 4**</td>
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<td></td>
<td>EE561 Computer Systems Engineering</td>
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<tr>
<td></td>
<td>EE562 Computer Electronics 4</td>
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<td>EE563 Advanced Computer Techniques 3</td>
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<tr>
<td></td>
<td>EE598 Digital Systems and Control 2*</td>
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<td></td>
<td>EE500 Industrial Experience 24 weeks</td>
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<td>EE403 Management Project External 2</td>
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</table>
MO55 Bachelor of Technology (Aviation)

VTAC Course Code-34516

This three year full-time degree course prepares students for careers 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.

The subjects shown with an asterisk will be provided at Moorabbin Aviation Academy and integrated with the flying component of the course.
Bachelor of Engineering (Manufacturing)

Bachelor of Engineering courses are currently under review.

The following course is the 1990 syllabus. It is anticipated that a modified course will be introduced for commencement in 1995. Details of this modified course will be supplied to students at enrolment.

Bachelor of Engineering 1995 syllabus course

This program will extend over eight academic semesters plus two semesters of industry based learning.

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
or
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)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours per week</th>
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<tbody>
<tr>
<td>CE116</td>
<td>Engineering — Solid Mechanics 3 3</td>
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<tr>
<td>EE180</td>
<td>Engineering — Physics 2.5 2.5</td>
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<tr>
<td>EE181</td>
<td>Engineering — Electronics and Computing 4 4</td>
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<tr>
<td>EF190</td>
<td>Professional Studies 2 1</td>
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<tr>
<td>MM121</td>
<td>Engineering — Energy Systems 2 4</td>
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<tr>
<td>MM122</td>
<td>Engineering — Chemistry and Materials 3 3</td>
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<td>MM123</td>
<td>Engineering — Graphics and CAD 2.5 2.5</td>
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<tbody>
<tr>
<td>MM220</td>
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<td>MM230</td>
<td>Engineering Materials 2 2</td>
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<tr>
<td>MM240</td>
<td>Electronics and Measurement Systems 2 2</td>
</tr>
<tr>
<td>MM241</td>
<td>Applied Mechanics 4 —</td>
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<tr>
<td>MM250</td>
<td>Design for Industry —</td>
</tr>
<tr>
<td>MM270</td>
<td>Manufacturing/CAD 2 2</td>
</tr>
<tr>
<td>MM280</td>
<td>Introduction to Management 1 1</td>
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<tr>
<td>MM297</td>
<td>Professional Computing 3 3</td>
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<tr>
<td>SM299</td>
<td>Mathematics —</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours per week</th>
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<tbody>
<tr>
<td>MM309</td>
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<td>MM330</td>
<td>Advanced Materials 1 2</td>
</tr>
<tr>
<td>MM380</td>
<td>Productivity Improvement 2 2</td>
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<tr>
<td>MM381</td>
<td>Managerial Economics 3 3</td>
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<tr>
<td>MM396</td>
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<td>Computer Interfacing 2</td>
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<td>MM471</td>
<td>Numerical Engineering 2</td>
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<tr>
<td>MM480</td>
<td>Facilities Planning and Design 3</td>
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<td>MM481</td>
<td>Decision Analysis 2</td>
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<tr>
<td>MM482</td>
<td>Manufacturing Operations Management —</td>
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<td>MM472</td>
<td>Manufacturing Technology —</td>
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<td>MM414</td>
<td>Stagewise Processes 5</td>
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<td>MM415</td>
<td>Mass Transfer 4</td>
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<tr>
<td>MM409</td>
<td>Industry Based Learning 24 weeks</td>
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</table>
# Bachelor of Engineering (Mechanical)

Bachelor of Engineering courses are currently under review.

The following course is the 1990 syllabus. It is anticipated that a modified course will be introduced for commencement in 1995. Details of this modified course will be supplied to students at enrolment.

**Bachelor of Engineering 1995 syllabus course**

This program will extend over eight academic semesters plus two ~esters of industry based learning.

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 years' plus the 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</th>
<th>Hours per week</th>
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<td>MM121 Engineering — Energy Systems</td>
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<td>MM122 Engineering — Chemistry and Materials</td>
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<td>MM123 Engineering — Graphics and CAD</td>
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<td>EF180 Engineering — Physics</td>
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<td>EF190 Professional Studies</td>
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**Second year**

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<td>MM230 Engineering Materials</td>
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<td>MM240 Electronics and Measurement Systems</td>
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<td>MM243 Applied Mechanics</td>
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<td>MM250 Design for Industry</td>
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<td>MM260 Ergonomics</td>
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<td>MM270 Manufacturing Technology and CAD/CAM</td>
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<tr>
<td>MM280 Introduction to Management</td>
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<tr>
<td>MM297 Professional Computing</td>
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<tr>
<td>SM299 Engineering Mathematics</td>
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Plus 36 hours of MM209 Engineering Practices during a break period.

**Third year**

<table>
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<tr>
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<td>Sem 1</td>
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<tr>
<td>MM309 Industry Based Learning</td>
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<td>MM320 Energy Systems</td>
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<td>MM331 Engineering Materials</td>
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* Part-time students may undertake this subject in parts a, b, c.

**Fourth year**

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<td>MM440* Mechanics and Machine Systems</td>
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<td>MM451 Design for Industry</td>
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<td>MM460 Ergonomics</td>
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<td>MM483 Engineering Management</td>
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<td>SM499 Engineering Mathematics</td>
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<tr>
<td>MM409 Industry Based Learning</td>
<td>24 weeks</td>
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</tbody>
</table>

* Part-time students may undertake this subject in parts a, b, c.
Fifth year

- **MM509** Engineering Mathematics 2
- **MM540** Mechanics and Machine Systems (2 of 4) (Mechanics of Solids; Vibration and Modal Analysis; Machine systems; Simulation)
- **MM551** Engineering Technology (3 of 5) (Engineering Ergonomics; Engineering Technologies; Equipment Life Cycle; Occupational Risk; Technology Modelling).
- **MM580** Management Practices 2

**Hours per week**

---

**ID**

- **MM509** Engineering Mathematics (plus 92 hours) 4**
- **MM580** Management Practices 2

**The project is undertaken over an 18 week semester and involves 148 hours of contact.**

**Part-time students may undertake these subjects in parts a, b, c etc.**

---

### The Swinburne School of Design course information

Design and Industrial Design courses are only available at the Prahran campus.

#### Graphic Design

#### Bachelor of Design (Graphic Design)

The aim of the degree 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 degreehonours streams but in the final degree year, a number of special bias studies are offered, including photography, illustration and three-dimensional design.

#### Course structure

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<th>Hours/week</th>
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<td>D021</td>
<td>Studio Projects 1B</td>
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<tr>
<td>D111</td>
<td>History of Arts 1</td>
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<tr>
<td>D120</td>
<td>Introduction to Film and Media Studies</td>
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</tr>
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</table>

Alternate subjects for overseas students

- **GD120** Ideas, Culture & Communication (2 semesters) (alternate for 1 sem each of GD111 History of Arts and GD120 Intro to Film & Media Studies.)

**Fourth year IBL Honours degree**

<table>
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<tr>
<th>Code</th>
<th>Hours/week</th>
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<tr>
<td>D050</td>
<td>Studio Projects 4A</td>
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<tr>
<td>D410</td>
<td>Studio Projects 48 (Honours Dissertation)</td>
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<tr>
<td>D490</td>
<td>Design Management (one semester)</td>
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**Fourth year Design Centre degree program**

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<th>Hours/week</th>
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<td>Studio Projects 4</td>
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<tr>
<td>D411</td>
<td>Studio Projects 4B (Honours Dissertation)</td>
</tr>
<tr>
<td>D490</td>
<td>Design Management (one semester)</td>
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</table>

#### Bachelor of Design (Honours) (Graphic Design)

#### Industry Based Learning (IBL) Program

The aim of the honours year 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 honours program. 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, supervised by senior staff.

During the year in industry, students are required to attend the University for one day per week for subjects: Print Technology and Art and Design Culture.

In the final year, in addition to Studio Projects 4, Design Management is studied.

#### Design Centre Degree Program

Degree students who achieve an overall high standard in their final year qualify to apply for the Design Centre Honours 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

**First and second year**

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<tr>
<th>Code</th>
<th>Hours/week</th>
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<td>D50</td>
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<td>D101</td>
<td>Studio Projects 1B</td>
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<td>D111</td>
<td>History of Arts 1</td>
</tr>
<tr>
<td>D120</td>
<td>Introduction to Film and Media Studies</td>
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</tbody>
</table>

Alternate subjects for overseas students

- **GD120** Ideas, Culture & Communication (2 semesters) (alternate for 1 sem each of GD111 History of Arts and GD120 Intro to Film & Media Studies.)

**Fourth year Design Centre degree program**

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
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</tr>
<tr>
<td>D411</td>
<td>Studio Projects 4B (Honours Dissertation)</td>
</tr>
<tr>
<td>D490</td>
<td>Design Management (one semester)</td>
</tr>
</tbody>
</table>
**Industrial Design**

**Bachelor of Design (Industrial Design)**

The course structure as set out below provides a learning environment in which students will experience a proportional relationship between design theory and design practice with a strong emphasis on the design process and creative problem solving.

The thrust of the course structure is to more fully equip the next generation of Australian industrial design students for the profession by meeting the following objectives:

- ensuring students' thought processes, problem solving abilities and supporting technical skills are developed to an internationally professional standard
- ensuring that the course content remains relevant to the needs of industry and the professional body
- enhancing the learning opportunities for students by encouraging interaction with other areas of the University and industry to ensure that the most current and expert knowledge is available.

In the latter stages of the program there is an 'Individual Studies Program' subject in place that allows students a degree of self-direction in their own career path aspirations by giving them the opportunity to undertake studies in other areas of the University.

**Duration of the course**

Completion of the Bachelor of Design (Industrial Design) will require three years of full-time study and the Bachelor of Design (Honours) will require four years of full-time study. The programs are not available for part-time study.

**Course structure**

**Year 1**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>ID101 Industrial Design 1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Design Principles 1A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Common Studies 1A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Design Drawing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Technology 1</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Design and Manufacture 1A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Workshop 1A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Drawing 1D</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Computer Studies 1A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Design History 1A</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td>ID201 Industrial Design 2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Design Principles 1B</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Common Studies 1B</td>
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<tr>
<td></td>
<td>Presentation Drawing</td>
<td>3</td>
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<tr>
<td></td>
<td>Technology 2</td>
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<tr>
<td></td>
<td>Design and Manufacture 1B</td>
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<tr>
<td></td>
<td>Engineering Graphics 1</td>
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</tr>
<tr>
<td></td>
<td>Workshop 1B</td>
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<tr>
<td></td>
<td>ID203 Visualisation</td>
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<tr>
<td></td>
<td>ID204 Computer Studies 1B</td>
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<tr>
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<td>ID205 Design History 1B</td>
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</table>

**Year 2**

<table>
<thead>
<tr>
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<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>ID301 Industrial Design 3</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>Design Projects 2A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID302 Technology 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Design and Manufacture 2A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID303 Professional Studies 1</td>
<td>2</td>
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<tr>
<td></td>
<td>ID304 C.A.D. Studies</td>
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<tr>
<td></td>
<td>ID305 Design History 2A</td>
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<td><strong>Semester 2</strong></td>
<td>ID401 Industrial Design 4</td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td>Design Projects 2B</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID402 Technology 4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID403 Professional Studies 2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID404 CAD/CAM Studies</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID405 Design History 2B</td>
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**Year 3**

<table>
<thead>
<tr>
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<th>Course</th>
<th>Credits</th>
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<tr>
<td><strong>Semester 1</strong></td>
<td>ID501 Industrial Design 5</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>ID502 Technology 5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID503 Professional Studies 3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>ID505 Art and Design Culture 1A</td>
<td>3</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td>ID601 Industrial Design 6</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>ID605 Art and Design Culture 1B</td>
<td>3</td>
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<tr>
<td></td>
<td>ID607 Design Research Skills</td>
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<tr>
<td></td>
<td>ID608 ISP 1 (Independent Study Program 1)</td>
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**Year 4**

<table>
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<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>ID701 Industrial Design 7</td>
<td>16</td>
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<tr>
<td></td>
<td>ID707 Design Research Methods 1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID708 ISP 2 (Independent Study Program 2)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td>ID801 Industrial Design 8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>ID807 Design Research Methods 2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID808 ISP 3 (Independent Study Program 3)</td>
<td>24</td>
</tr>
</tbody>
</table>

**Bachelor of Design (Honours) Industrial Design**

This program is available to high achieving students or those who have spent time within the design profession. The Honours stream requires one further year of full-time study. It will entail a blend of coursework, research and independent study. During this full-time year students will be encouraged to form links with industry and develop areas of specialisation or research while working in a professional environment under the guidance of lecturing staff and industry mentors.

**Year 4**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td>ID701 Industrial Design 7</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>ID707 Design Research Methods 1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID708 ISP 2 (Independent Study Program 2)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td>ID801 Industrial Design 8</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>ID807 Design Research Methods 2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ID808 ISP 3 (Independent Study Program 3)</td>
<td>24</td>
</tr>
</tbody>
</table>
Postgraduate course information

Z078  **Graduate Certificate of Applied Science** (Health Statistics)

A one year part-time program aimed at training people without a specialist mathematical or statistical background who wish to work in, or are already employed in, health related areas which require data analytical skills. The emphasis will be on skills development giving the participants the opportunity to become proficient with a variety of statistical tools used in the health sciences. It will concentrate on descriptive methods with only an introduction to statistical inference.

Applicants to the Graduate Certificate should have a relevant first degree or diploma qualification, although it is expected that they will have worked in a health related area. Other applicants whose occupation and experience indicates that they have the capacity to succeed, may be accepted into the course.

**Course structure**
The course is made up of four subjects. The class contact hours will normally be four hours per night, two nights per week for two semesters, consisting of a combination of lectures and practical work as applicable to the topic.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM751</td>
<td>Introduction to Data Analysis</td>
</tr>
<tr>
<td>SM750</td>
<td>Basic Statistical Computing</td>
</tr>
<tr>
<td>SM753</td>
<td>Survey Methods</td>
</tr>
<tr>
<td>SM754</td>
<td>Introduction to Health Statistics</td>
</tr>
</tbody>
</table>

**Application procedure**
See entry under 'General Divisional Information — Applied Science'.

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>Creditpoints</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>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC736</td>
<td>Research Skills, Part 1</td>
</tr>
<tr>
<td>SCXXX</td>
<td>Elective (One)</td>
</tr>
<tr>
<td>SCXXX</td>
<td>Elective (Two)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
</tr>
<tr>
<td>SC735</td>
<td>Elective Practical Skills</td>
</tr>
<tr>
<td>SC738</td>
<td>Minor Research Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 4</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC737</td>
<td>Research Skills, Part 2</td>
</tr>
<tr>
<td>SCXXX</td>
<td>Elective (Three)</td>
</tr>
<tr>
<td>SCXXX</td>
<td>Elective (Four)</td>
</tr>
</tbody>
</table>

Note: No exemptions are available to candidates for the Certificate.
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 Divisional Information — Applied Science'.

ZO84 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. School of Biophysical Sciences and Electrical Engineering.

To qualify for the award a student must complete eight of the subjects listed below of which one must be the project subject. 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

(1992 syllabus)

<table>
<thead>
<tr>
<th>Introductory subject</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP555 Introduction to Biophysical Systems</td>
<td>12.5</td>
</tr>
<tr>
<td>Biomedical subjects</td>
<td></td>
</tr>
<tr>
<td>SP531 Biophysical Systems and Techniques</td>
<td>12.5</td>
</tr>
<tr>
<td>SP532 Clinical Monitoring Techniques</td>
<td>12.5</td>
</tr>
<tr>
<td>SP534 Neurophysiological Techniques</td>
<td>12.5</td>
</tr>
<tr>
<td>Instrumentation subjects</td>
<td></td>
</tr>
<tr>
<td>SP541 Signal and Image Processing</td>
<td>12.5</td>
</tr>
<tr>
<td>SP545 Instrument and Interfacing Programming</td>
<td>12.5</td>
</tr>
<tr>
<td>SP547 Instrument Electronics I</td>
<td>2.5</td>
</tr>
<tr>
<td>Project subject</td>
<td></td>
</tr>
<tr>
<td>SP535 Biomedical Project</td>
<td>12.5</td>
</tr>
</tbody>
</table>

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

Introductory subject

| SP553 Introduction to Instrumentation Electronics | 12.5 |
| Biomedical subjects |
| SP563 Biophysics of Exercise | 12.5 |
| SP537 Medical Imaging | 12.5 |
| Instrumentation subjects |
| SP542 Optical Instrumentation | 12.5 |
| SP544 Nuclear Instrumentation | 12.5 |

Application procedure.

See entry under 'General Divisional Information — Applied Science'.

ZO88 Graduate Diploma of Applied Science (Computer Science)

A one year full-time or two year part-time program for graduates who require a specialized 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

(1993 syllabus)

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Creditpoints</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 Divisional Information — Applied Science'.

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### Z189 Graduate Diploma of Applied Science (Health Statistics)

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 statistical 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.

#### Course structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Course title</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>SM733 Demographic Techniques</td>
</tr>
<tr>
<td>12.5</td>
<td>SM750 Survey Methods</td>
</tr>
<tr>
<td>12.5</td>
<td>SM751 Statistical Methods</td>
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<tr>
<td>12.5</td>
<td>SM752 Epidemiological Methods</td>
</tr>
<tr>
<td>12.5</td>
<td>SM753 Analysis of Risks and Rates</td>
</tr>
</tbody>
</table>

#### Application procedure

See entry under 'General Divisional information — Applied Science'.

### Z086 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.

The Graduate Diploma will qualify graduates to take up research assistant positions involving both the management and application of research in the social sciences that require statistical methods for its design and analysis.

#### Course structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Course title</th>
</tr>
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<tbody>
<tr>
<td>12.5</td>
<td>SM733 Demographic Techniques*</td>
</tr>
<tr>
<td>12.5</td>
<td>SM735 Survey Sampling</td>
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<tr>
<td>12.5</td>
<td>SM743 Multivariate Statistics 1*</td>
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<tr>
<td>12.5</td>
<td>SM744 Statistical Modelling</td>
</tr>
<tr>
<td>12.5</td>
<td>SM746 Multivariate Statistics 2</td>
</tr>
<tr>
<td>12.5</td>
<td>SM747 Secondary Data Analysis</td>
</tr>
<tr>
<td>12.5</td>
<td>SM752 Advanced Statistical Computing</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 Divisional information — Applied Science'.

### Z085 Graduate Diploma of Applied Science (Industrial Chemistry)

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.

This 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 class honours degree in chemistry, but also exposure to such related issues as process economics, industrial issues and governmental regulations.

The Graduate Diploma will qualify graduates to take up research assistant positions involving both the management and application of research in the social sciences that require statistical methods for its design and analysis.

#### Course structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Course title</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.5</td>
<td>SM733 Demographic Techniques*</td>
</tr>
<tr>
<td>12.5</td>
<td>SM735 Survey Sampling</td>
</tr>
<tr>
<td>12.5</td>
<td>SM743 Multivariate Statistics 1*</td>
</tr>
<tr>
<td>12.5</td>
<td>SM744 Statistical Modelling</td>
</tr>
<tr>
<td>12.5</td>
<td>SM746 Multivariate Statistics 2</td>
</tr>
<tr>
<td>12.5</td>
<td>SM747 Secondary Data Analysis</td>
</tr>
<tr>
<td>12.5</td>
<td>SM752 Advanced Statistical Computing</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 Divisional information — Applied Science'.

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SM733: Demographic Techniques
SM735: Survey Sampling
SM743: Multivariate Statistics 1
SM744: Statistical Modelling
SM746: Multivariate Statistics 2
SM747: Secondary Data Analysis
SM752: Advanced Statistical Computing
Graduate Diploma in Construction Management

This course can be undertaken by attending components of the Master of Technology (Construction).

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
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</thead>
<tbody>
<tr>
<td>CE690</td>
<td>Civil Engineering Project Control</td>
<td>4</td>
</tr>
<tr>
<td>CE691</td>
<td>Civil Engineering Management</td>
<td>4</td>
</tr>
<tr>
<td>CE692</td>
<td>Communications</td>
<td>4</td>
</tr>
<tr>
<td>CE670</td>
<td>Construction Technology</td>
<td>4</td>
</tr>
<tr>
<td>CE790</td>
<td>Financial Project Control**</td>
<td>4</td>
</tr>
<tr>
<td>CE770</td>
<td>Construction Engineeringt</td>
<td>4</td>
</tr>
<tr>
<td>CE771</td>
<td>Construction Project*</td>
<td>4</td>
</tr>
</tbody>
</table>

*CE691 can be taken at night by attending CE693 and CE792 as an alternative, equivalent program.

** Attend CE794 Financial Management.

In semester 1, Graduate Diploma students undertake directed reports; in semester 2, they attend CE772 Construction Technology.

This is a major research paper on a topic agreed by the staff and the student.

Intake

The major intake is in Semester 1 each year. However, a small intake takes place in Semester 2.

For the second semester intake, students are offered the following program:

Graduate Diploma Semester 2 Intake

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE691</td>
<td>Civil Engineering Management</td>
<td>4</td>
</tr>
<tr>
<td>CE692</td>
<td>Communications</td>
<td>4</td>
</tr>
<tr>
<td>CE770</td>
<td>Construction Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CE690</td>
<td>Civil Engineering Project Control</td>
<td>4</td>
</tr>
<tr>
<td>CE670</td>
<td>Construction Technology</td>
<td>4</td>
</tr>
<tr>
<td>CE790</td>
<td>Financial Project Control</td>
<td>4</td>
</tr>
<tr>
<td>CE770</td>
<td>Construction Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CE771</td>
<td>Construction Project</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

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>First year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>ME621</td>
<td>Air-conditioning</td>
</tr>
<tr>
<td>ME622</td>
<td>Refrigeration</td>
</tr>
</tbody>
</table>

Second year

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>ME721</td>
<td>Air-conditioning</td>
</tr>
<tr>
<td>ME722</td>
<td>Refrigeration</td>
</tr>
<tr>
<td>ME731</td>
<td>Instrumentation and System Control</td>
</tr>
<tr>
<td>ME781</td>
<td>Project and Energy Management</td>
</tr>
</tbody>
</table>

Graduate Diploma in CAD/CAM

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 Head of School, 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</td>
</tr>
<tr>
<td>MM614</td>
<td>Automation and Machining</td>
</tr>
<tr>
<td>MM617</td>
<td>Introduction to CIM</td>
</tr>
<tr>
<td>MM620</td>
<td>Computers and Interfacing</td>
</tr>
<tr>
<td>MM621</td>
<td>Mathematics</td>
</tr>
<tr>
<td>MM618</td>
<td>Introduction to Robotics</td>
</tr>
<tr>
<td>MM612</td>
<td>CAD Practice</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM613</td>
<td>Micro CAD</td>
</tr>
<tr>
<td>MM622</td>
<td>Advanced Computer Techniques</td>
</tr>
<tr>
<td>MM615</td>
<td>Manufacturing Automation</td>
</tr>
<tr>
<td>MM623</td>
<td>Computer Based Management Systems</td>
</tr>
<tr>
<td>MM624</td>
<td>Management of CAD/CAM Technology</td>
</tr>
<tr>
<td>MM616</td>
<td>Manufacturing Automation</td>
</tr>
<tr>
<td>MM619</td>
<td>NC Project</td>
</tr>
</tbody>
</table>
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.

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.

Schedule A subjects:
- Chemical Engineering
- Design
- Stagewise Processes
- Mass Transfer
- Fluid Mechanics
- Heat Transfer
- Unit Operations
- Design Applications
- Chemical Engineering Design 2
- Chemical Engineering Design 3
- Non-Newtonian Technology

Schedule B subjects:
- ME762 Risk Engineering
- ME664 Risk Engineering
- ME765 Risk Engineering (H&S)
- ME764 Risk Control Practices and Technology
- MP717 Industrial Processes and Pollution Control
- MP719 Occupational Health and Safety
- ME742 Health and Hygiene
- EA491 Biochemical Engineering

Group 1 (risk engineering group)
Students choose a maximum of two subjects.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Semester per week 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 to choose a maximum of two subjects.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Semester per week 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>Subject</th>
<th>Hours</th>
<th>Semester per week 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>Subject</th>
<th>Hours</th>
<th>Semester per week 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>

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.

Entrance 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 Divisional 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, but may be taken over two years part-time.
Course structure

Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM617</td>
<td>Introduction to CIM</td>
<td>2</td>
</tr>
<tr>
<td>MM620</td>
<td>Computers and Interfacing</td>
<td>2</td>
</tr>
<tr>
<td>MM632</td>
<td>Computer Aided Design</td>
<td>2</td>
</tr>
<tr>
<td>MM614</td>
<td>Automation and Machining</td>
<td>2</td>
</tr>
<tr>
<td>MM625</td>
<td>Machine Systems</td>
<td>2</td>
</tr>
<tr>
<td>MM626</td>
<td>Advanced Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>MM627</td>
<td>Manuf. Management Systems</td>
<td>2</td>
</tr>
<tr>
<td>MM628</td>
<td>Control Systems and Devices</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total hours per week</strong></td>
<td></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM629</td>
<td>Computers and Interfacing</td>
<td>2</td>
</tr>
<tr>
<td>MM615</td>
<td>Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM630</td>
<td>Mathematics and Computing</td>
<td>2</td>
</tr>
<tr>
<td>MM633</td>
<td>Advanced CAD</td>
<td>4</td>
</tr>
<tr>
<td>MM622</td>
<td>Advanced Computer Techniques</td>
<td>2</td>
</tr>
<tr>
<td>MM631</td>
<td>Machine Systems 2</td>
<td>2</td>
</tr>
<tr>
<td>MM623</td>
<td>Computer Based Mgt. Systems</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total hours per week</strong></td>
<td></td>
<td><strong>16</strong></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>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM710</td>
<td>Introduction to Risk</td>
<td>2</td>
</tr>
<tr>
<td>MM711</td>
<td>Quantitative Risk</td>
<td>2</td>
</tr>
<tr>
<td>MM712</td>
<td>Risk Law</td>
<td>2</td>
</tr>
<tr>
<td>MM713</td>
<td>Risk Management Practices</td>
<td>2</td>
</tr>
<tr>
<td>MM714</td>
<td>Risk Analysis</td>
<td>2</td>
</tr>
<tr>
<td>MM715</td>
<td>Risk Engineering</td>
<td>2</td>
</tr>
<tr>
<td>MM716</td>
<td>Risk Evaluation Principles</td>
<td>2</td>
</tr>
<tr>
<td>MM718</td>
<td>Financial Risk Management</td>
<td><strong>8</strong></td>
</tr>
<tr>
<td><strong>Total hours per week</strong></td>
<td></td>
<td><strong>10</strong></td>
</tr>
</tbody>
</table>

Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM810</td>
<td>Risk Engineering Science</td>
<td>2</td>
</tr>
<tr>
<td>MM813</td>
<td>Risk Management Practices</td>
<td>2</td>
</tr>
<tr>
<td>MM816</td>
<td>Risk Technology</td>
<td>2</td>
</tr>
<tr>
<td>MM817</td>
<td>Risk Research</td>
<td>2</td>
</tr>
<tr>
<td>MM820</td>
<td>Risk Engineering Science</td>
<td>2</td>
</tr>
<tr>
<td>MM823</td>
<td>Risk Management Practices</td>
<td>2</td>
</tr>
<tr>
<td>MM826</td>
<td>Risk Technology</td>
<td>2</td>
</tr>
<tr>
<td>MM827</td>
<td>Risk Project</td>
<td>2</td>
</tr>
</tbody>
</table>

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>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM607</td>
<td>Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM608</td>
<td>Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM605</td>
<td>Design for Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>MM614</td>
<td>Automation and Machining</td>
<td>2</td>
</tr>
<tr>
<td>MM606</td>
<td>Manufacturing Technology</td>
<td>5</td>
</tr>
<tr>
<td>MM604</td>
<td>Design for Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>MM615</td>
<td>Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM616</td>
<td>Manufacturing Automation</td>
<td>2</td>
</tr>
<tr>
<td>MM613</td>
<td>Micro CAD</td>
<td>2</td>
</tr>
<tr>
<td>MM617</td>
<td>Introduction to CIM</td>
<td>2</td>
</tr>
<tr>
<td>MM620</td>
<td>Computers and Interfacing</td>
<td>2</td>
</tr>
<tr>
<td>MM612</td>
<td>CAD Practices</td>
<td>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

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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 be spread over two years.

Course structure (1992 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Core subjects</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM710</td>
<td>Introduction to Risk</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM711</td>
<td>Quantitative Risk</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM712</td>
<td>Risk Law</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM713</td>
<td>Risk Management Principles</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM714</td>
<td>Risk Analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM715</td>
<td>Risk Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM716</td>
<td>Risk Evaluation Principles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MM718</td>
<td>Financial Risk Management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year (complete stream of choice)</th>
<th>Health and Safety stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM810</td>
<td>Risk Engineering Science</td>
</tr>
<tr>
<td>MM811</td>
<td>Risk Management Practices</td>
</tr>
<tr>
<td>MM814</td>
<td>Risk Technology</td>
</tr>
<tr>
<td>MM817</td>
<td>Risk Research</td>
</tr>
<tr>
<td>MM818</td>
<td>Risk Engineering Science</td>
</tr>
<tr>
<td>MM821</td>
<td>Risk Management Practices</td>
</tr>
<tr>
<td>MM824</td>
<td>Risk Technology</td>
</tr>
<tr>
<td>MM827</td>
<td>Risk Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plant and Property stream</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MM810</td>
<td>Risk Engineering Science</td>
</tr>
<tr>
<td>MM812</td>
<td>Risk Management Practices</td>
</tr>
<tr>
<td>MM815</td>
<td>Risk Technology</td>
</tr>
<tr>
<td>MM817</td>
<td>Risk Research</td>
</tr>
<tr>
<td>MM819</td>
<td>Risk Engineering Science</td>
</tr>
<tr>
<td>MM822</td>
<td>Risk Management Practices</td>
</tr>
<tr>
<td>MM825</td>
<td>Risk Technology</td>
</tr>
<tr>
<td>MM827</td>
<td>Risk Project</td>
</tr>
</tbody>
</table>

Maintenance (production risks) stream

| MM810 | Risk Engineering Science | 2 |
| MM813 | Risk Management Practices | 2 |
| MM815 | Risk Technology          | 2 |
| MM817 | Risk Research            | 2 |
| MM820 | Risk Engineering Science | 2 |
| MM823 | Risk Management Practices | 2 |
| MM826 | Risk Technology          | 2 |
| MM827 | Risk Project             | 2 |

ZO91  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>Year 1</th>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC716</td>
<td>Basic Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC717</td>
<td>Basic Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC733</td>
<td>Practical Techniques in Colloid Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC734</td>
<td>Practical Techniques in Surface Science</td>
<td>7.5</td>
</tr>
<tr>
<td>SC736</td>
<td>Research Skills, Part 1</td>
<td>5.0</td>
</tr>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC757</td>
<td>Research Project</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Semester 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC757</td>
<td>Research Project</td>
<td>10.0</td>
</tr>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC757</td>
<td>Research Project</td>
<td>10.0</td>
</tr>
<tr>
<td>SC718</td>
<td>Surface Characterisation</td>
<td>7.5</td>
</tr>
<tr>
<td>SC719</td>
<td>Chemistry of Inorganic Colloids</td>
<td>7.5</td>
</tr>
<tr>
<td>SC757</td>
<td>Research Project</td>
<td>10.0</td>
</tr>
</tbody>
</table>
The elective subjects are to be chosen from the following:

- SC737
- SC739
- SC743
- SC742
- SC740
- SC757
- SC744
- SC741

These subjects will not all be offered in any one year. Their availability will be determined by student demand and the list will be expected to complete six of the above electives.

### Application procedure

See entry under 'General Divisional Information — Applied Science'.

## IO90 Master of Information Technology

This course is offered in conjunction with the Division of Business, Humanities and Social Science.

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 clusters are listed below. Clusters are of three types:

- **Discipline clusters**: consisting of four subjects with a common theme.
- **Complementary clusters**: consisting of four subjects that complement another cluster, or clusters of four subjects that have little in common. Complementary cluster subjects may be chosen from other clusters, honours degree subjects 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 are offered 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 Subject</th>
<th>Title</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Engineering</td>
<td>IT904</td>
<td>The Software Process</td>
</tr>
<tr>
<td></td>
<td>IT914</td>
<td>Systems Analysis</td>
</tr>
<tr>
<td></td>
<td>IT924</td>
<td>Object Oriented Design and Programming</td>
</tr>
<tr>
<td></td>
<td>IT934</td>
<td>Real Time Systems</td>
</tr>
<tr>
<td></td>
<td>IT944</td>
<td>Advanced Database Technology</td>
</tr>
<tr>
<td>Automated Systems Development</td>
<td>IT954</td>
<td>Information System Requirements</td>
</tr>
<tr>
<td></td>
<td>IT964</td>
<td>Resources for Information Systems Development</td>
</tr>
<tr>
<td></td>
<td>IT974</td>
<td>Systems Strategies 4</td>
</tr>
<tr>
<td></td>
<td>IT984</td>
<td>Automated Development Methods</td>
</tr>
<tr>
<td>Human-Computer Interaction</td>
<td>IT906</td>
<td>Human-Computer Interaction</td>
</tr>
<tr>
<td></td>
<td>IT916</td>
<td>Programming the User Interface 4</td>
</tr>
<tr>
<td></td>
<td>IT926</td>
<td>Interactive Systems Development</td>
</tr>
<tr>
<td></td>
<td>IT996</td>
<td>HCI Project</td>
</tr>
<tr>
<td>Intelligent Systems Engineering</td>
<td>IT909</td>
<td>Foundations of Intelligent Systems</td>
</tr>
<tr>
<td></td>
<td>IT919</td>
<td>Intelligent Systems Applications</td>
</tr>
<tr>
<td></td>
<td>IT929</td>
<td>Adaptive Intelligent Systems</td>
</tr>
<tr>
<td></td>
<td>IT999</td>
<td>ISE Project</td>
</tr>
<tr>
<td>Research/Project</td>
<td>IT903</td>
<td>Software Engineering Project (for 2 semesters)</td>
</tr>
<tr>
<td></td>
<td>IT913</td>
<td>Automated Systems Development Project (for 2 semesters)</td>
</tr>
<tr>
<td></td>
<td>IT993</td>
<td>Research Project (for 2 semesters)</td>
</tr>
</tbody>
</table>

(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 ‘Applied Science General Divisional Information’.

**ZO93 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>Year 1</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td></td>
</tr>
<tr>
<td>SP555</td>
<td>Introduction to Biophysical Systems 12.5</td>
</tr>
<tr>
<td>SP531</td>
<td>Biophysical Systems and Techniques 12.5</td>
</tr>
<tr>
<td><strong>Semester 2</strong></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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td></td>
</tr>
<tr>
<td>SP534</td>
<td>NeurophysiologicalTechniques 12.5</td>
</tr>
<tr>
<td>SP545</td>
<td>Instrument Programming and Interfacing 12.5</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td></td>
</tr>
<tr>
<td>SP537</td>
<td>Medical Imaging 12.5</td>
</tr>
<tr>
<td>SP541</td>
<td>Signal and Image Processing 12.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Creditpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Semester 1</strong></td>
<td></td>
</tr>
<tr>
<td>SP731</td>
<td>Technology Transfer 12.5</td>
</tr>
<tr>
<td>SP732</td>
<td>Research Project 25.0</td>
</tr>
<tr>
<td><strong>Semester 2</strong></td>
<td></td>
</tr>
<tr>
<td>SP733</td>
<td>Research Project 25.0</td>
</tr>
</tbody>
</table>

**ZO96 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.

<table>
<thead>
<tr>
<th>Creditpoints</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SM745 Project Planning 12.5</td>
<td></td>
</tr>
<tr>
<td>SM748 Research Methodology 12.5</td>
<td></td>
</tr>
<tr>
<td>SM749 Minor Thesis 25.0</td>
<td></td>
</tr>
</tbody>
</table>

**Application procedure**

See entry under ‘General Divisional Information — Applied Science’.

**C092 Master of Technology (Construction Management)**

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 Divisional Board, are of a satisfactory standard and are a suitable preparation for study in the Masters program

and

iv) preferably have appropriate experience.
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 one and a half 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 Technology program is two semesters and the minimum period of attendance is twelve calendar months. The full-time program normally extends over three semesters.

Candidates wanting to complete the course in the minimum time of twelve months must enrol for the Minor Thesis in the second semester of their enrolment and will obtain a deferred result at the end of that semester and a final result at the end of the twelfth month. The course may be completed by part-time study.

### Course structure

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Total</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total for Management &amp; Construction Technology</td>
<td>16</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

### Minor Strand (Building Construction)

<table>
<thead>
<tr>
<th>Hours per week</th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Total</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total for Management and Building Technology</td>
<td>16</td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>

### Entrance requirements

(a) **Normal entry**

A four year degree in engineering or physical sciences or equivalent qualification.

(b) **Other applicants**

Students who have completed the coursework for the Graduate Diploma in Computer Integrated Manufacture may be admitted to the program with advanced standing, rather than be awarded with a Graduate Diploma, provided they have not failed a subject twice or more than three subjects.
Entrance requirements

(a) Normal entry
A four year degree at a good second class honours level in engineering or equivalent qualification.

(b) Other applicants
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, rather than be awarded the Graduate Diploma provided they have:
(a) not failed a subject twice
(b) not failed more than three individual subjects
(c) previously completed a Bachelors degree (or equivalent) in Engineering.

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM617</td>
<td>Introduction to CIM</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM620</td>
<td>Computers and Interfacing</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>MM632</td>
<td>Computer Aided Design</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM614</td>
<td>Automation and Machining</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM625</td>
<td>Machine Systems</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM626</td>
<td>Advanced Mathematics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM627</td>
<td>Manuf. Management Systems</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM628</td>
<td>Control Systems and Devices</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total hours per week</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>MM629</td>
<td>Computers and Interfacing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM615</td>
<td>Manufacturing Automation</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM630</td>
<td>Mathematics and Computing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM633</td>
<td>Advanced CAD</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MM622</td>
<td>Advanced Computer Techniques</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM631</td>
<td>Machine Systems</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM623</td>
<td>Computer Based Mgt. Systems</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Total hours per week</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM901</td>
<td>Database Technology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MM902</td>
<td>Numerical Engineering</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MM906</td>
<td>Project — Part A</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total hours per week</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>MM903</td>
<td>Numerical Engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Project</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MM904</td>
<td>Systems Integration</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MM905</td>
<td>Computers and Interfacing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MM907</td>
<td>Project — Part B</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total hours per week</td>
<td>19</td>
<td></td>
</tr>
</tbody>
</table>

Masters by Research

Graduates at Bachelors degree level who have shown a high standard of academic achievement may be admitted to candidacy for the degree of Master of Applied Science or Master of Engineering.

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 statue 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 Graduate Studies Officer.

Y096 Civil Engineering
Y097 Electrical Engineering
Y098 Mechanical Engineering
Y099 Manufacturing Engineering

Z090 Applied Science

By research and thesis. Enquiries should be made to the Swinburne Graduate Research School. Copies of the stature are available from this office or appear in the ‘Procedures and Regulations’ chapter of this Handbook.

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 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 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 Swinburne Graduate Research School.

Y006 Civil Engineering
Y007 Electrical Engineering
YM07 Electrical Engineering (Mooroolbark)
Y008 Mechanical and Manufacturing Engineering
Applied Science

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 Bachelors 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 Swinburne Graduate Research School.
Subject details
This section contains a brief description of the subjects which
comprise the Division of Science, Engineering and Design
courses. Subject codes are listed in numerical order within the
following alpha-codes.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>Liberal Studies</td>
</tr>
<tr>
<td>BB</td>
<td>Business</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering and Building</td>
</tr>
<tr>
<td>EA</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>EF</td>
<td>Engineering</td>
</tr>
<tr>
<td>GD</td>
<td>Graphic Design</td>
</tr>
<tr>
<td>ID</td>
<td>Industrial Design</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MF</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>MM</td>
<td>Mechanical and Manufacturing Engineering</td>
</tr>
<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>SA</td>
<td>Applied Science</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
</tr>
<tr>
<td>SK</td>
<td>Computer Science</td>
</tr>
<tr>
<td>SM</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Physics</td>
</tr>
<tr>
<td>SQ</td>
<td>Computer Science</td>
</tr>
</tbody>
</table>

Subject length
UNLESS OTHERWISE STATED ALL SUBJECTS ARE SEMESTER
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.

Applied Science subjects
Reading guides
Because of the frequency with which individual publications
become out-dated, and are superseded, textbooks and
references are not listed for all subjects.

In most subjects a detailed reading guide will be issued during
the first week of classes and students are advised not to
purchase textbooks or reference books until the classes
commence unless they have previously consulted the lecturer
in charge of the subject.

Students wishing to carry out preliminary reading in a subject
should consult the lecturer in charge of that subject for
guidance.

AB200  Knowledge Thought and Computers
10 credit points
No. of hours per week: three hours

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 Division
of Business, Humanities and Social Science.

AB310  Behavioural Studies and Communication
5 credit points
No. of hours per week: two hours

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 areas such
as industrial relations including negotiation, conciliation,
handling conflict and hostility at an organisational level.

AB2100  Behavioural Studies and Communication
5 credit points
No. of hours per week: two hours

Subject description
The emphasis in this course will be on interpersonal
communication skills and stress management. Topics in
communication will include: nonverbal 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 Division of Business, Humanities and Social Science
subject details for further information.
BS141  **Introductory Law**  
5 credit points  
No. of hours per week: two hours  

**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**  
5 credit points  
No. of hours per week: two hours  

**Subject description**  
Introduction to management techniques with particular reference 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**  
7.5 credit points  
No. of hours per week: two hours  

**Subject description**  
To consider efficient internal administrative procedures to ensure against liability for negligent advice.  
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.

BS513  **Business Studies — Accounting**  
7.5 credit points  
No. of hours per week: three hours  

**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**  

BS519  **Business and Management**  
10.0 credit points  
No. of hours per week: four hours  

**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.

BS626  **Behaviour in Organisations**  
5 credit points  
No. of hours per week: three hours  
Assessment: tests and assignments  

**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 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.
Business and Management

20 credit points
No. of hours per week: four hours

See BS619 for details.

Environmental Health Law

10 credit points
No. of hours per week: four hours

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 and interpretation of the legislation will be studied.

Legal Procedure and Evidence

10 credit points
No. of hours per week: four hours

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. Pleas, 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.

Applied Mechanics

No. of hours per week: three hours for two semesters
Instruction: lectures, tutorials, laboratory work
Assessment: examination 80%, assessed work 20%

Subject aims and description
This subject is 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

Engineering Science — Solid Mechanics

No. of hours per week: three hours two semesters
Assessment: examination 80%, assessed work 20%

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

Statutory Control

This subject has two components:
CE192A Statutory Control/Plan Checking 1 and
CE192B Introduction to Construction Law.

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
This subject is 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 Control Act 1981, Melbourne, Victorian Govt. PUb Office


**CE192B Introduction to Construction Law**

**Subject aims and description**

This subject is 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**

The Law Handbook. Fitzroy Legal Service

Maher, F. and Waller, L. An Introduction to Law. 6th edn, Sydney, Law Book Co., 1991


**CE196 Communications**

**Subject aims and description**

This subject is 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.

**Textbooks**

Building Surveyor. Editor D. Wadsworth

Other references to be advised during lectures

**CE204 Computer Application**

**No. of hours per week: two hours**

**Instruction:** lectures, tutorials, laboratory work

**Assessment:** assessed work 100%

**Subject aims and description**

This subject is designed to enable students to understand the operation and use of computers in industry. The subject covers: introduction to microcomputers, operating systems. Overview of word processing, spreadsheets and CAD.

**References**

Person, R. Using Excel 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: deflections due to axial force and bending, flexibility method of analysis for continuous beams and indeterminate trusses.

Statically indeterminate structures: development of the slope displacement 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**


**Reference**

White, RN, Gergely, P. and Sexsmith, RG. Structural Engineering. Wiley, 1976
CE231  **Hydraulics**  
No. of hours per week: three hours for two semesters  
Assessment: examination 70%, tutorials/assignments/laboratory 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**  
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 member, 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 organising 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, bookkeeping 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  
Instruction: lectures, tutorials, fieldwork  
Assessment: examination 80%, assessed work 20%

**Subject aims and description**  
This subject is 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**  

**References**  
AS170.1-1989 SAA Loading Code Part 1: Dead and live loads and load combinations  
AS3600-1988 Concrete Structures  
AS4100-1990 SAA Steel Structures Code
**CE256 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**

This subject is 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
AS4100 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**

This subject is 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 Falsework

This section covers the temporary structures used in the construction of buildings.

**Textbooks**

Formwork Code
Scaffolding Code

**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**

This subject is 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 Falsework

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**

This subject 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
Das, B.M. Principles of Geotechnical Engineering. 3rd edn, Boston, PWS, 1994
AS1726-1981 SAA Site Investigation Code

**CE293** Geomechanics

No. of hours per week: three hours
Instruction: lectures, tutorials, laboratory work
Assessment: examination 70%, reports 30%

**Subject aims and description**
This subject is 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 laboratory tests, soil water, foundations: introduction to bearing capacity, settlement and footing design. Approval of foundation. Inspections.

References
Das, B.M. Principles of Geotechnical Engineering. 3rd edn, Boston, PWS, 1994
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**
This subject is 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
Victoria Building Regulations

References
Relevant Australian standards

**CE294B Town Planning**

No. of hours per week: two hours
Prerequisite: CE192 Statutory Control
Instruction: lectures, tutorials
Assessment: examination 70%, assessed work

**Subject aims and description**
This subject introduces students to problems in planned development in urban and rural environments.

The planning process: the purpose of planning, historical development of urban settlements, social 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 GIS Systems for planning purposes.

References

**CE295 Engineering Management**

No. of hours per week: three hours
Assessment: written work 40%, verbal 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
This subject 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. 1984

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

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 static 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

CE317  Construction
No. of hours per week: six hours in first semester, five hours in second semester
Instruction: lectures, tutorials, field inspections, drafting classes
Assessment: examination 80%, diary, reports, research project, folio of work 20%

Subject aims and description
This subject is 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 freehand sketching and drafting.

Textbook

References
Australian Standard AS1100 Technical Drawings
Notes on Science of Building V.G.P.S.

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 CE231 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 run off process.  
Subject description  
Steady closed conduit flow: pipe friction formulae, hydraulic and energy grade-lines, equivalent pipes to replace 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 microcomputer software for the production of enhanced computer generated contoured plans of engineering surveys.  
References  
GEOCOMP software manual by Survey Computing Consultants (publishers and authors), 1989  

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.

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  
Methods of structural analysis: first order linear, second order linear and non-linear analysis, with particular reference to codes of practice.  
Elastic stability of frames, stability functions, geometric element stiffness matrix.  
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-null connections.  
Design of concrete structures: modelling and analysis of three dimensional forms such as stairs, combined footings and flat slab systems, reinforcement detailing.

CE395 Engineering Management  
No. of hours per week: three hours  
Assessment: examination 70%, assignments and submitted work 30%  
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 with site and contractor’s site safety: regulations and acts, safety precautions, codes of practice.

Operations analysis: time and motion studies, time lapse techniques, sampling of operations, queueing theory in determining economic haul-server systems.

Computer Applications
No. of hours per week: two hours
Prerequisite: CE204 Computer Applications
Instruction: lectures, laboratory work
Assessment: assessed work 100%

This subject is designed to enable students to be aware of and use common programs for administrative and technical areas of building surveying.

The subject covers external databases, administrative software, technical software, decision support software: awareness and use of systems such as BCAIDER, on-line enquiry systems. Major vendor installation: awareness and understanding of what is available from major vendors.

It is expected that the activities undertaken in this subject will be coordinated with other subjects in the course where computer applications are the usual tool to assist in problem solving.

Reference
Zwart, P.R. Microcomputers in Local Government. 1896. ACADS Code of Practice. CPI.

Water and Transport Engineering
(Elective)
No. of hours per week: four hours
Assessment: examinations 70%, assignments and laboratory 30%

Subject aims
To extend students’ knowledge and skills in the areas of transport engineering and water engineering.

Subject description
Transport Engineering (28 hours)
Road traffic: flow theories, human performance, vehicle characteristics. Arterial road traffic management.
Signals: saturation flow, calculation of signal timing, layout of hardware, signal linking, traffic detection, filter turns, layout of hardware.
Road materials: properties of and tests for road building materials, rheology of bitumens, skid resistance.
Railway engineering: conventional railway track, track design and geometry, track construction. Light rail design.

Water Engineering (28 hours)
Reservoir yield.
Potable water treatment: methods, theory of sedimentation and filtration.
Wastewater treatment and disposal: methods and their applications, loading rates.

Structural Engineering
No. of hours per week: five hours
Assessment: examination 50%, assessment by consultation 30%, laboratory and assignments 20%.

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.

Structural Engineering (Elective)
No. of hours per week: four hours
Assessment: assignments 100%

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.
Prestressed 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
This subject is 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%

This subject deals 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: surface and subsurface drainage: elements of hydrology, applications to roof and site drainage. Groundwater. Hydraulics of pressure conduits: total energy line, hydants hydraulic grade line, energy components, graphical representation, pipe friction formulas, 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
This subject is designed to give students an appreciation of the general principles and structural details for multi-storey structures.

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
This subject is designed to give students an appreciation of the general principles, structural details of special structures.

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%

This subject is designed to extend students' knowledge in the area of geomechanics.


Textbooks
AS2870-1 Residential Footing Code Standards — Australia

References
Das, B.M. Principles of Geotechnical Engineering, 3rd edn, Boston, PWS, 1994

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
This subject 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
AS1 530, Methods for Fire Tests on Building Materials & Structure
AS1 668, Mechanical Ventilation and Air Conditioning

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, in situ tests.

References
AS1726-1981 SAA Site Investigation Code
AS2159-1987 SAA Piling Code
AS2870-1986 Residential Slabs and Footings
Das, B.M Principles of Geotechnical Engineering. 3rd edn, Boston, PWS, 1994

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
This subject introduces students to organisation and management theory, to provide an understanding of the processes applied to industrial relations in Australia. It 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

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 theory
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
CE496C Professional Projects

CE496A Statutory Control/Plan Checking 3
No. of hours per week: five hours
Prerequisite: CE294 Statutory Control
Instruction: lectures, tutorials
Assessment: examination 60%, reports 40%

Subject aims and description
This subject is 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, 1990, 2nd edn, Canberra, Australian
Uniform Building Regulations Co-ordinating Council, 1990
Building Control Act Melbourne, Victorian Government Publishing Office
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
This subject deals with the regulatory and statutory aspects of urban planning.


References
Appropriate Planning Acts and Regulations

CE496C 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
This subject is 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

CE505 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.

CE507 Municipal and Transport Engineering (Major Elective)
No. of hours per week: five hours
Assessment: examination, assignment/ laboratory work

Subject aims
To extend students' knowledge and skills in the 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, airport capacity, air traffic control, ferries, selection of mode.

Road engineering: application of queueing 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.

CE516 Structural Engineering (Major Elective)
No. of hours per week: five hours
Assessment: assignment/laboratory work

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

CE533 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.

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.

CE560 Environmental Engineering and Planning
7.5 credit points
No. of hours per week: six hours

Subject description
Introduction to drainage system design. Open channel flow.
Water quality standards, treatment processes for drinking water, swimming pools and spa baths.
Soil classification systems including laboratory and field identification and classification. Soil permeability and groundwater flow.
Introduction to land use planning with particular emphasis on the role of the environmental health officer.
Structure and process of planning in Victoria including neighbourhood and regional planning.
Planning scheme surveys including environmental impact assessments.

CE576 Construction Engineering (Major Elective)
No. of hours per week: five hours
Assessment: class test 40%, assignments 30%. verbal 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 subgrades, 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.

Environmental engineering

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


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.

**CE670  Construction Technology**

No. of hours per week: four hours
Instruction: lectures/tutorial/discussion
Assessment: 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 visit; training films on plant handling, syndicate discussion or plant choice etc.
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
Carmichael, D.G. Construction Engineering Networks: Techniques, Planning and Management, Chichester, E. Horwood, 1989
Harris, F. and McCaffer, R. Modern Construction and Management, 3rd edn, Oxford, BPP Professional, 1989

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
Robinson, D.M. Writing Reports for Management Decisions. Columbus, Ohio, CE Merrill, 1989

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 edn, Sydney, Butterworths, 1988

Introduction to Contract Law

Instruction: lectures/tutorials
Assessment: by assignment work

Subject aims
This subject is 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.

References

Practical work
Site visits
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

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

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

CE773 Research Project
Instruction: practical work requiring regular meetings with supervisors
Assessment: by written reports, thesis and presentations

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
This subject 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, individual and group psychology, industrial psychology, structure and role of the trade unions, human resource management.

Practical work
Visit arbitration court.

Textbooks
- Australia to 1 April 1991. Industrial Relations Act, 1988. 2nd edn. consolidated, North Ryde, N.S.W., CCH Australia 1991
References
American Soc. of Safety Engineers. New Directions in Safety. Park Ridge, Ill., American Society of Safety Engineers, 1985

CE792 Health and Safety in Construction
Instruction: lectures/tutorials/seminars
Assessment: assignment work and seminar papers

Subject aims
To make the student aware of 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
Hoyos, C.G. Occupational Safety and Accident Prevention. Amsterdam, Elsevier. 1988

CE793 Construction Law
Instruction: lectures/tutorials/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
Khoury, D. Understanding Contract Law. 3rd edn, Sydney, Butterworths, 1992

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
Gobourne, J. Site Cost Control in the Construction Industry. Butterworths, 1982

Practical work
Computer modelling

E4411 Non-Newtonian Technology
No. of hours per week: four hours for two semesters
Assessment: laboratory work and examination

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 (up to and including solutions to relevant equations of motion), precedes the work on non-Newtonian flow, viscometry, heat transfer and mixing. The final aspect of the subject is the application of this work to some practical situations such as heat sterilisation.

References
Biochemical Engineering

Subject aims
To give students a grounding in the theory and practice of biological processes used in engineering.

Subject description
Requirements for growth in biological material; variations in microorganisms; fermentation pathways. Enzyme reaction kinetics and absolute reaction rate theory; continuous fermentation, aeration and agitation. Mass transfer theories. Bubble and mechanical aeration; scale up; operational and control. Biological water treatment — BOD, COD.

Mathematical modelling for the design of activated sludge plants, trickling filter and sludge digesters. Nitrification, eutrophication and river modelling.

References

Engineering Science — Electronics and Computing

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)
Units in electrical engineering
Resistance, inductance, capacitance, voltage sources, current sources, energy storage and energy dissipation.

Linear circuit analysis (electronics and circuits)

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 capacitive elements. The phasor representation and the phasor diagram.

Digital electronic concepts (electronics and circuits)

EE188 Computing Part I
Brief history of computing.
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 subrange 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
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
Borland. Turbo Pascal Reference Guide, Version 5.0 or 5.5
DOS Reference Manual
DOS Technical Reference
Dubtemann, J. Complete Turbo Pascal. 3rd edn, Scott, Forsman, 1989
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

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

Texts/References

EE258 Electrical Machines 3
No. of hours per week: four hours for two semesters
Prerequisites: EE188 Electronics, Circuits and Computing
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment/labatory

Subject aims
To introduce the principles of magnetic circuits, electromechanical energy conversion, transformers, induction machines and power electronics.

Subject description


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/labatory

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, 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

Subject aims
To introduce the principles and applications of communication systems.

Subject description
General concepts: communication systems, spectral analysis, fundamentals of signal transmission.
Analogues 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/tutorials/laboratory
Assessment: examination/assignment

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 dependant sources). 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. Locus 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 including Z, Y, cascade and hybrid, showing how the interconnection of the networks will decide 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 (R-L & R-C) 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
Skilling, Electric Networks. New York, Wiley, 1974

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: examinations/assignments

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.
Combination 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: examinations/assignments

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 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 (M68230pi/t, M68681 duart)
Assembler — HLL (CC) 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

Texts
Egan, G.K. Introduction to Digital Computer Systems, Hawthorn, Vic., Swinburne University of Technology
M68000 Family Reference. United States, Motorola, 1988
Sommerville, I. Software Engineering. 4th edn, Wokingham, Addison-Wesley, 1992
EE383 Electromagnetic Fields

No. of hours per week: two hours
Prerequisites: SM294 Engineering Mathematics, SP294 Engineering Physics
Instruction: lectures/tutorials
Assessment: examination/assignment

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/tutorial/laboratory
Assessment: examination/assignments/laboratory

Subject description
To develop the principles of negative feedback amplifiers, and digital/analog system interfacing.

Subject aims
To develop the principles of negative feedback amplifiers, and digital/analog system interfacing.

Design and analysis of 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 hours per week: three hours*

**Prerequisites:** EE283 Communication Principles

**Instruction:** lectures/laboratory

**Assessment:** examination/assignments

**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.

**Texts/References**

**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

**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**


Analysis of linear systems: the linear single input continuous signal system. Use of classical time domain, transfer functions and frequency response techniques. The second order system. Stability criteria; S plane and frequency response. Analogue computer techniques. Analysis of an electromechanical systems.

**Control concepts:**

- Control strategies. Open and closed loop systems and feedback. Classification of control systems.
- Control system representation: formulation of mathematical models. Transfer functions and block diagrams. Graphical representation of systems — the S plane, the root locus plot, the frequency plot of transfer functions. Stability and steady state performance.

**Texts/References**

**EE402 Management Fundamentals**

*No. of hours per week: three hours*

**Prerequisites:** nil

**Instruction:** lectures/tutorials

**Assessment:** examination/assignments

**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**

To provide students with a satisfactory understanding of the fundamentals of management practice and accounting.

Supervision, management and the management environment including planning, organising, controlling, leading and staffing.

Supervisory skills including communications, team building, problem solving and decision making. Australian industrial relations and anti-discrimination.

Finance: introduction to business finance, sources of funds, use of funds, financial accounting, double entry book-keeping through to trial balance, management accounting, costing, capital investment, working capital.

**Textbook**

**References**
EE403  **Engineering Project Management**

Prerequisites: nil
Instruction: seminars
Assessment: assignment

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**

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

**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 technique; 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

**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.

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, New York, EEE Computer Societies.
IEEE Transactions on Computers
IEEE Transactions on Computer Aided Design
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

**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.

**References**
IEEE 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

**Subject aims**
To introduce students to the basic concepts and techniques of data communications, computer networks and layered protocols.

**EEE Computer Systems Engineering**
No. of hours per week: five hours
Prerequisites: EE287 Electronics, EE263 Computer Systems Engineering
Instruction: lectures/laboratory
Assessment: examination/laboratory exercises

**Subject aims**
To broaden the students' knowledge of computer architecture and to examine the implementation techniques applicable to high performance computer hardware.

**References**
Mimar, T. Programming and Designing with the 68000 Family: Including the 68000, the 68010/12, the 68020 and the 68030. Englewood Cliffs, NJ, Prentice Hall, 1991
IEEE 'Computer' (various papers)
IEEE 'Micro' (various papers)
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

Part B — Electrical machines


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.

References
Say, M.G. Alternating Current Machines. 5th edn, New York, Wiley, 1983
Simple receiver — antenna and receiver for freq. >150MHz and simple field strength meter

BoF for freq. >100MHz

Pre-amplifier using u-strip design for freq. >500MHz

Investigating the use of light via optical fibres for data transfers

Investigating the use of co-axial cable and its behaviour at high frequency.

Part B

Data communication networks and open system standards

Electrical interface

Data transmission

Protocol basics

Data link control protocols

Local area networks

Wide area networks.

References

Part A


Part B


Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd edn. Wokingham, Addison-Wesley, 1992

EE483 Electronics

No. of hours per week: four hours

Prerequisites: EE386 Electronics

Instruction: lectures/tutorials/laboratory

Assessment: examination/assignments

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.

Digital signal processing


References


EE489 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/assignments

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


Design of control systems from a classical approach using compensators P.I.D., controllers and state feedback.

Introduction to non-linearities and their effect on the system.

Describing functions.

Texts/References


Dorf, R.C. Modern Control Systems. 6th edn, Reading, Mass., Addison-Wesley, 1992


EE502 Management Practice
No. of hours per week: three hours
Prerequisites: EE402 Management Fundamentals
Instruction: lectures/tutorials/seminars
Assessment: examination/assignments/class participation

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.

EE545 Electronics
No. of hours per week: four hours
Prerequisites: EE483 Electronics
Instruction: lectures/laboratory
Assessment: examination/assignment

Subject aims
To introduce students to algorithmic state machines, the design and synthesis of modern integrated digital systems including VLSI design rules and performance estimation.

Subject description
Part A
Digital system design with programmable logic.
Synthesis of algorithmic state machines using PLD's and FPGA's.
Array logic bussed cellular array, array logic structures, use of synthesis and verification tools in digital design.

Part B
VLSI Design.
Basic CMOS circuit blocks, layout design rules, circuit characterisation and performance estimation, system design.

Texts/References
Green, D. Modern Logic Design. Wokingham, Addison-Wesley, 1986

EE548 Communications
No. of hours per week: six hours
Prerequisites: EE482 Communications
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment/laboratory

Subject aims
To gain insight into the behaviour of telecommunication and computer networks, with particular emphasis on performance analysis and optimisation.

Subject description
Teletraffic engineering — random processes, traffic, the Erlang loss function, simulation methods.
Network topological structures and performance.
Routing and flow control in circuit switched networks.
Message switches network performance.
Routing and flow control in message switched networks.
Token ring and random access protocols and their performance.
Cellular mobile networks.
Integrated voice and data networks (ISDN, BISDN) and their performance.

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

**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

**Subject aims**

To study the latest industrial machine drives from the point of view of steady state 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.


Machine windings: characteristics and physical layouts.

Fractional


**Texts/References**

AS1359. General Requirements for Rotating Electrical Machines. Standards Association of Australia


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

**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: EE456 Electrical Design

Instruction: lectures/tutorials/laboratory

Assessment: examination/assignment

**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


Advanced Computer Techniques

EE563

No. of hours per week: three hours
Prerequisites: EE467 Computer Communications
Instruction: lectures/laboratory
Assessment: assignment/computer laboratory

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

Electronics

EE576

No. of hours per week: three hours
Prerequisites: EE476 Electronics
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment

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. A/D and D/A conversion. Data communications and interfacing.

Part B — Power electronics

References
Williams, B.W. Power Electronics. 2nd edn, Basingstoke, Macmillan, 1992
Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd edn, Wokingham, Addison-Wesley, 1992

Electrical Power Systems

EE597

No. of hours per week: five hours
Prerequisites: EE475 Electrical Power and Machines
Instruction: lectures/tutorials/laboratory
Assessment: examination/assignment

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

References
EE598  Digital Systems and Control
No. of hours per week: two hours
Prerequisites: EE489 Control Systems, SM494 Engineering Mathematics
Instruction: lecture/tutorial/laboratory
Assessment: examination/assignment

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 sampling and techniques of computer based control including interfacing and data acquisition.

Subject description
Design of control systems to meet a set of specifications. Classical methods of lead-lag networks and PID controllers from root locus and frequency domain approach. Commercial packages and PLC's. 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

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/exercised assignments/tests

Subject aims
To introduce students to the basic concepts and techniques of data communications, computer networks and layered protocols.

Subject description

References
Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd edn, Wokingham, England, Addison-Wesley, 1992

EE741  Computer Systems and Software Engineering
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/laboratory
Assessment: laboratory/exercised assignments/tests

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
**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

**Subject aims**
After completing this subject 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 conveners 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.

Students will be required to present their project results in a seminar.

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**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 exercised tests

**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 Parallel and Distributed Systems  
- IEEE Transactions on Parallel and Distributed Systems  
- Manufacturer's Programming Manuals  

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**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/tests

**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 trade-offs
- 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  

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**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

**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 edn, Reading, Mass., Addison-Wesley, 1992

**References**

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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 exercised assignments/tests

**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 compensators 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 edn, Reading, Mass., Addison-Wesley, 1992

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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 exercised assignments/tests

**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**
Telettraffic 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**
This list of books will be complemented by reference to specialist research papers

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EE750 **Digital Spectral Estimation**

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/tutorial/laboratory
Assessment: assignment/project/tests

**Subject aims**
To introduce the principles and techniques used in performing digital power spectral estimation.

**Subject description**
The following topics will be covered:
- principles of multirate digital signal processing
- estimation of spectra from finite-duration observation of signals
- nonparametric methods for power spectrum estimation
- parametric methods for power spectrum estimation
- minimum variance spectral estimation
- eigenanalysis algorithms for spectrum estimation.

**References**

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Engineering Physics

No. of hours per week: two and a half hours
Instruction: lectures and laboratory work
Assessment: examination, laboratory and tutorial work

Subject aims
This subject is designed to provide students with scientific concepts, fundamental to engineering sciences, an essential bridge from secondary education into professional engineering.

Subject description
Electricity and magnetism, d.c. circuits, linear and rotational dynamics, kinetic theory of gases, atomic physics, optics, wave motion, fluid mechanics.

Textbooks
Optional: Study Guide, to accompany above, Serway and Gordon, 3rd edn

Professional Studies

No. of hours per week: two hours for first semester and one hour for second semester

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

Studio Projects 1A

No. of hours per week: ten hours practical for two semesters
Assessment: continuous

Studio Projects 1A and 1B
Studio Projects 1A and 1B refer to two coordinated work programs with specific emphasis on developing in students an individual creative approach to solving communication problems using visual and conceptual means.

Subject aims and description
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.

These sequential programs are directed at developing a general awareness of visual aspects of the students’ environment and facility for critical objective analysis.

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.

Design for print
This subject introduces 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.

Textbooks
Students are advised not to purchase textbooks or references until classes commence.

Studio Projects 1B

No. of hours per week: ten hours practical for two semesters
Assessment: continuous

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 aims 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.

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.
GD111  **History of Arts 1**

No. of hours per week: three hours for two semesters  
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 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 crossover 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 placed on creativity.

**Recommended reading**  
Rosenblum, R. and Janson, H.W. *Art of the Nineteenth Century*  
London, Thames and Hudson, 1984

GD120  **Introduction to Film and Media Studies**

No. of hours per week: two hours for two semesters  
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.

GD130  **Ideas, Culture & Communication**

No. of hours per week: two hours  
Assessment: continuous

This subject has been designed to help and encourage overseas students to improve their command of written and spoken English in order to assist them to successfully complete the applied subjects in this course. Emphasis is placed on the links between art/design/political and social realities.

GD201/ GD202  **Studio Projects 2A & 2B**

No. of hours per week: ten hours each practical for two semesters  
Prerequisites: Studio Projects 1A and 1B  
Assessment: continuous

Areas included in Studio Projects 2A: design, methods of production and computer-aided design.  
Areas included in Studio Projects 2B: photography, typography, drawing and illustration

**Studio Projects 2A and 2B**

These subjects constitute a bridge between the formative studies undertaken in Studio Projects 1A and 1B and the applied studies of Studio Projects 3. The educational aim of Studio Projects 2A and 2B is to bring the student to a high standard of competence in the illustrative, typographic, written and oral presentation of ideas. These skills are used 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.

GD211  **History of Arts 2**

No. of hours per week: three hours for two semesters  
Prerequisites: GD111 History of Arts 1  
Assessment: continuous

**Subject aims and description**

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.

**Recommended reading**  
Fry, T. *Design History Australia*. Sydney, Hale Iremonger, 1988  
GD220  Theory of Representation
No. of hours per week: two hours for two semesters
Assessment: continuous

Subject aims and description
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.

GD301  Studio Projects 3
No. of hours per week: twenty hours for two semesters
Prerequisites: GD201, GD202, GD211 and GD220
Assessment: continuous
N.B.: additional work required outside scheduled hours, including evenings and weekends

Subject aims and description
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, publication design and aspects of behavioural studies.

GD303  Industrial Year
Two semesters industrial experience
Prerequisite: GD201, GD202, GD211 and GD220
Assessment: continuous

GD322  Print Technology
No. of hours per week: two hours for one semester
Assessment: continuous

Subject aims and description
This subject investigates the theory and application of modern print technology. It is not intended that this subject 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.

GD355  Art and Design Culture
No. of hours per week: three hours for two semesters
Prerequisite: GD211 History of Arts 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

Subject aims and description
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.

GD410  Studio Projects 4A
No. of hours per week: eighteen hours for two semesters
Prerequisite: GD301 Studio Projects 3 or GD303 Industrial Year
Assessment: continuous
N.B.: additional work required outside scheduled hours, including evenings and weekends

Subject aims and description
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.

GD411  Studio Projects 4B (Honours Dissertation)
No. of hours per week: six hours for two semesters
Prerequisite: GD301 Studio Projects 3 or GD303 Industrial Year
Assessment: Panel of teaching staff and external design professionals convened to undertake critical appraisal of dissertations.

Subject aims and description
This subject aims to develop a sophisticated research methodology which applies to the practice of design and postgraduate research.
Students research and then produce a single project which demonstrates the student's special interest in visual communication. Through research and documentation the project responds to a program of enquiry that is of general importance to the discipline of graphic design. It is a synthesis of previous experience, realised by research and then production of a project.
Design Management

No. of hours per week: two hours for one semester
Assessment: continuous

Subject aims and description
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 are 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 coordinator and guest lecturers.

ID101B Common Studies 1A

No. of hours per week: two hours
Prerequisite: nil

Subject aims
To create a general understanding of the value and application of a variety of useful topics as they apply to industrial designers and in the practice of other related disciplines.

Subject description
Topics to be covered in this subject will include time management, typography, photography and reprographics as they pertain to industrial designers.

ID101C Design Drawing

No. of hours per week: three hours
Prerequisite: nil

Subject aims
To introduce students to perspective and 'box construction' drawing as a basis for two dimensional communication techniques such as product sketching and more formal visualisation.

Subject description
The introduction to one, two and three point perspective as it pertains to industrial design and the construction of sophisticated forms from basic constructed geometric units.

ID102 Technology 1

This subject consists of:
- ID102A Design and Manufacturing 1A
- ID102B Workshop Techniques 1A
Prerequisites: nil

Subject aims
An introduction to the structure, properties, and processing of engineering materials.

Subject description
The classification, structure and properties of engineering materials.
Elements, compounds and mixtures.
Metals and non-metals.
Organic and inorganic materials, chemical bonding, properties of materials.
Testing and inspection techniques used to determine the properties of materials.
Material data sheets.
**ID102B  Workshop Techniques 1A**
No. of hours per week: three hours
Prerequisites: nil

**Subject aims**
This subject will outline the basic theory and practice of modelmaking.

**Subject description**
This subject will explore the basic materials and techniques used in the production of design models and prototypes. Tutorial and workshop sessions will ensure the safe use of handtools, machinery and the various materials used in modelmaking for design. The function of models and their role in the design process will also be discussed and demonstrated.

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**ID103  Drawing**
Prerequisites: nil
No. of hours per week: six hours

**Subject aims**
To cultivate a visual language by observation and personal expression through various media.

**Subject description**
The content includes drawing the human figure, drawing from studio 'set-ups', and field work expanding on such topics as life, nature, color, form, expression and texture using basic drawing principles.

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**ID104  Computer Studies 1A**
Prerequisites: nil
No. of hours per week: three hours

**Subject aims**
To introduce computing and give an understanding of the variation of programs and languages available.

**Subject description**
To introduce the computer as a tool in aiding the process of business activities such as information retrieval and as a method of communication. Topics will cover a basic understanding of language and simple programs for every day use such as word processing, database and spreadsheet. Computer environments will be explored and the differences discussed. The student will gain an understanding of how to use computers for the purposes of presenting written information and retrieving data.

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**ID105  Design History 1A**
Prerequisite: nil
No. of hours per week: three hours

**Subject aims**
To establish frames of reference, a broad cultural base for students, by the exploration of developments in art and design during the modernist period. The course aims to bring students to an awareness of the role that art and design plays in shaping and communicating our social, political and cultural values.

**Subject description**
Semester one explores European and Australian developments in design and art ranging from the industrial revolution and neo-classicism to the end of the nineteenth century. While charting the work of individual designers and artists the course also explores cultural themes such as gender and class, imperialism and nationalism, east and west and considers the influence of political and social conditions on western culture.

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**ID201  Industrial Design 2**
This subject consists of:
ID201A Design Principles 1B
ID201B Common Studies 1B
ID201C Presentation Drawing

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**ID201A  Design Principles 1B**
No. of hours per week: three hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

**Subject aims**
To expand the range of design methodologies used to creatively resolve design problems.

**Subject description**
This subject refines design methodologies and will include product research, analysis and identification of the problem, methods for dealing with creative problem solving, removing mental blocks and clear thinking. Divergent and convergent thought processes will be examined. Areas of interest will include lateral thinking, form follows function, functionalism, association, brainstorming techniques and other methodologies. Practical exercises and discussions will consolidate these processes.

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**ID201B  Common Studies 1B**
No. of hours per week: two hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

**Subject aims**
To introduce students to the process of design and design practice.

**Subject description**
Through a series of practice projects, students will be introduced to the process of design and the incorporation of other design areas into this process.

Areas include:
- graphics
- photography
- drawing and visual thinking
- basic model making
- engineering
ID201C  Presentation Drawing
No. of hours per week: three hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

Subject aims
To further develop the communication drawing techniques covered in the first semester and introduce the use of color for more formal renderings.

Subject description
The generation of more sophisticated forms using construction drawing methods and the introduction of color rendering techniques.

ID202  Technology 2
This subject consists of:
ID202A Design and Manufacturing 1B
ID202B Engineering Graphics
ID202C Workshop Techniques 1B

ID202A  Design and Manufacturing 1B
No. of hours per week: three hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

Subject aims
An introduction to the structure, properties, and processing of engineering materials.

Subject description
This subject introduces students to the classification, structure and properties of wood and wood products, wood technology, and machining and fabrication techniques.

Areas of interest will include testing and inspection techniques used to determine the properties of timber and wood products and designing for manufacture in wood and wood products.

ID202B  Engineering Graphics 1
No. of hours per week: three hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

Subject aims
To give students a practical background in the skills and materials required to produce engineering drawings in accordance with AS1 100.

Subject description
This subject deals with the formal technical skills of engineering drawing.

This subject will cover requirements for engineering drawings, orthographic projection and auxiliary projections, sectioning and dimensioning, two dimensional geometry, details of machine elements, screws and fasteners, etc.

ID202C  Workshop Techniques 1B
No. of hours per week: three hours
Prerequisites: ID101 Industrial Design 1
ID102 Technology 1

Subject aims
This subject will develop skills and knowledge to enable the appropriate use of model making materials, techniques and finishes.

Subject description
This subject will introduce a wider range of materials and techniques through demonstration and use of the workshop machinery. The use of a variety of materials such as plastic, timber, moulding materials, sheetmetal, steel and aluminium will provide an opportunity to produce models and prototypes representing product design projects.

ID203  Visualisation
Prerequisites: ID103 Drawing
No. of hours per week: three hours

Subject aims
To help establish the ‘process of design’ as second nature through freehand sketching.

Subject description
To encourage free ranging design, investigative drawing and form study exercises with the accent on enjoyable self-expression.

ID204  Computer Studies 1B
Prerequisites: ID104 Computer Studies 1A
No. of hours per week: three hours

Subject aims
To introduce computing and the type of programs and languages applicable to design environments.

Subject description
Topics covered will include desktop publishing, illustration and photo-imaging for graphic and industrial applications. The use of data storage, file maintenance and bureau services will be discussed. Practical work will provide the student with specific knowledge in areas critical to industrial design.
ID205  **Design History 1B**  
Prerequisites: ID105 Design History 1A  
No. of hours per week: three hours  

**Subject aims**  
In semester two, students will explore European developments in design and art ranging from post-impressionism through futurism, dada, the Bauhaus, surrealism and American and Australian modernism. While charting the work of individual designers and artists the course also explores cultural themes such as gender and class, imperialism and nationalism, east and west and considers the influences of political and social conditions on Western culture.

ID301  **Industrial Design 3**  
This subject consists of:  
ID301A Design Projects 2A  
ID301B Product Illustration

ID301A  **Design Projects 2A**  
No. of hours per week: six and a half hours  
Prerequisites: ID101 Industrial Design  
ID201 Industrial Design 2  
ID202 Technology 2  
ID205 Design History 1B

**Subject aims**  
To introduce industrial design development principles and methods of practice while concentrating on the identification of the problem and the purpose of exploring multiple design solutions.

**Subject description**  
Creative problem solving utilising knowledge gained in the theoretical and practical studies will be encouraged, and an emphasis on the understanding of the process of design will underpin all activities. The student will begin to develop an appreciation of three dimensional form and aesthetics by removing many of the constraints normally existing in design problems.  

Topics include: Communication of ideas through both two and three dimensional presentations, including basic rendering and mockups as development aids; understanding of the concept of producing more than one viable solution to problems; understanding of appropriate manufacturing processes for various solutions; ability to define the problem; appreciation of form and appreciation of function.

ID301B  **Product Illustration**  
No. of hours per week: three hours  
Prerequisites: ID201 Industrial Design 2, ID202 Technology 2, ID205 Design History 1B

**Subject aims**  
The introduction of technical graphics as it pertains to the industrial designer.

**Subject description**  
The subject provides an introduction to perspective grids, the generation of exploded views, sectional drawings and instruction in how these technical graphics are used to enhance the visual presentation of design concepts.

ID302  **Technology 3**  
This subject consists of:  
ID302A Design and Manufacturing 2A  
ID302B Electronics  
ID302C Ergonomics

Prerequisites:  
ID101 Industrial Design 1  
ID201 Industrial Design 2  
ID202 Technology 2

ID302A  **Design and Manufacturing 2A**  
No. of hours per week: two hours  
Prerequisites:  
ID201 Industrial Design 2  
ID202 Technology 2

**Subject aims**  
To give the student an introduction to the structure, properties and processing of a range of plastic and related materials.

**Subject description**  
This subject introduces the student to the classification, structure and properties of plastics.  
The processing, fabrication, fastening and decoration of plastic components.  
Testing and inspection techniques used to determine the properties of plastic materials.  
Introduction to more advanced materials such as ceramics, composites, and adhesives.  
The design for manufacture of moulded plastic and composite components.

ID302B  **Electronics**  
No. of hours per week: two hours  
Prerequisites: ID201 Industrial Design 2, ID202 Technology 2

**Subject aims**  
To introduce basic concepts of electric and electronic circuitry and give an appreciation of the industry and construction methods related to product design.

**Subject description**  
This subject will introduce basic concepts of electrical and electronic theory and practice. Through discussion and practical sessions, students will gain an appreciation of printed circuit board design, construction, component layout and product design, commercial componentry and technical manuals.  

Electric and electronic standards will be covered to outline their effect on component selection and design considerations.
ID302C  **Ergonomics**

No. of hours per week: two hours
Prerequisites: ID201 Industrial Design 2, ID202 Technology 2

**Subject aims**
To introduce students to the wide range of factors affecting the relationship between people and their working environment by evaluating human capabilities and limitations and how the application of ergonomic principles and data can be applied to optimise design, performance and wellbeing of the user.

**Subject description**
Topics include: an introduction to the philosophy of ergonomics, its principles and disciplines; learning the anatomical, physiological and anthropometric capabilities and limitations of the human body; gaining an understanding of the biomechanics of the human body; evaluating and analysing human performance; engineering psychology and human behavioural characteristics; ergonomic product and workplace design; the environmental factors which effect human performance; human information processing characteristic; the design of controls and displays for compatibility with human needs and expectations; system design and task analysis; occupational health and safety, risk engineering, control and prevention.

ID303  **Professional Studies 1**

This subject consists of:
ID303A Technical Writing
ID303B Product Critiques 1

ID303A  **Technical Writing**

No. of hours per week: two hours
Prerequisites: ID201 Industrial Design 2, ID202 Technology 2, ID204 Computer Studies 1B

**Subject aim**
This subject introduces the principles and practices of technical writing with respect to reports, manuals and other industry related documentation.

**Subject description**
This subject will cover the nature and basic rules of communication as appropriate to the designer. Other topics will include the fundamentals of style, reader based writing, report writing, submissions and briefs, graphics and desktop publishing, documentation blueprints, drafting, editing, production and distribution of documentation.

ID303B  **Product Critiques 1**

No. of hours per week: three hours
Prerequisites: ID201 Industrial Design 2, ID202 Technology 2, ID204 Computer Studies 1B

**Subject aims**
To increase the students’ analytical skills with rational objectivity.

**Subject description**
Case studies, seminars, discussion, deconstruction or reconstruction and analysis of design will examine such areas as:
- their own and others’ work
- aesthetic rationale
- manufacturing and production
- conceptual design

ID304  **CAD Studies**

No. of hours per week: three hours
Prerequisites: ID202 Technology 2, ID204 Computer Studies 1B

**Subject aims**
To introduce the potential of the computer as a design and drafting tool, and to develop the students’ expertise in the use of CAD for the production of engineering drawings.

**Subject description**
Introduction to the operation of a PC based computer-aided design laboratory, its equipment and software. Through demonstration and practical work the student will learn the operating system and commands necessary to produce hard copy engineering drawings using the CAD system.

ID305  **Design History 2A**

No. of hours per week: two and a half hours
Prerequisites: ID205 Design History 1 B

**Subject aims**
In year two students will be asked to further develop the critical, analytical and conceptual thought required to formulate and articulate considered and well informed opinions.

Students will be encouraged to extend and consolidate their research, presentation and writing skills through intensive thought and debate.

**Subject description**
Semester three concentrates on post World War II design, the critique of modernism and the conflict between high art and mass culture. Theories of symbology are explored along with issues relating to the cultural discourse constructed by design: commodity culture, advertising, clothes as code, the home as the site of consumption, and corporate imperialism.

ID401  **Industrial Design 4**

This subject consists of:
ID401A Design Projects 2B
ID4016 Engineering Graphics 2

ID401A  **Design Projects 2B**

No. of hours per week: nine and a half hours
Prerequisites: ID301 Industrial Design 3, ID302 Technology 3

**Subject aims**
To expand the application of learned theoretical skills and knowledge to problem solving.

**Subject description**
The student will begin to resolve complex issues relating to design and be expected to utilise professional presentation techniques in order to communicate their ideas. Greater emphasis will be placed on the conceptual development of ideas and providing the relevant technical information to
support chosen solutions. This semester will concentrate on a
developed use of professional presentation techniques,
demonstration of an understanding of the integration of the
technical and professional skills and draw on a sophisticated
use of mockups to communicate ideas. The student will be
expected to conduct research to establish a basis for
resolution. The projects in this semester will be small scale.

**ID401B Engineering Graphics 2**

No. of hours per week: three hours
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3

**Subject aim**
To introduce advanced engineering drawing and CAD skills,
and to introduce aspects of mechanical design.

**Subject description**
Advanced engineering drawing including detailed multiple-
component assemblies, linear and geometric tolerancing,
geometry of solids and development of lines of intersection
and surface development for intersecting solids.
Introduction to elements of mechanical design such as
bearings, drives, seals and simple lever, gear, and cam
mechanisms etc.
Use of CAD in engineering drawing.

**ID402 Technology 4**

No. of hours per week: two hours
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3

**Subject aims**
An introduction to the structure, properties, and processing of
metals.

**Subject description**
The classification, structure and properties of ferrous and non-
ferrous metals and their alloys.
Hot and cold forming, heat treatment and surface treatment of
metals including the mechanism of corrosion and the
protection of metals.
Machining and fabrication of metals
Testing and inspection techniques used to determine the
properties of metals.
Design for manufacture in metal.

**ID403 Professional Studies 2**

This subject consists of:
- ID403A Process Management
- ID403B Product Critiques 2
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3
- ID303 Professional Studies 1

**ID403A Process Management**

No. of hours per week: three hours
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3
- ID303 Professional Studies 1

**Subject aim**
To develop an understanding of the designer's role in the
industrial environment and the management of design
projects.

**Subject description**
Topics to be covered include manufacturing theory with
reference to the management of the design process, design for
export, resource planning, government resources, vendor
qualification and quality management.
Project Management will also be examined as it applies to
designers and the manufacture of products within the scope of
the designer.
Guest lecturers will be used as required for specific assistance
and will discuss hypothetical and actual case studies.

**ID403B Product Critiques 2**

No. of hours per week: three hours
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3
- ID303 Professional Studies 1

**Subject aim**
To raise students level of inquiry and evaluation of design and
its consequences.

**Subject description**
Case studies, seminars and discussions will analyse the effects
of design on topics including:
- their own and other's work
- the environment and material selection
- transition of cottage industry to mass production
- cradle to grave considerations
- the effect of technology on product aesthetics

**ID404 CAD CAM Studies**

No. of hours per week: three hours
Prerequisites:
- ID301 Industrial Design 3
- ID302 Technology 3
- ID304 CAD Studies

**Subject aims**
To introduce three dimensional computer modelling and its
relationship to computer aided manufacture.

**Subject description**
Students will be introduced to the User Co-ordinate System,
3D co-ordinate entry, model space and paper space, 3D
displays and dynamic views, wireframe modelling, surface
modelling, and solid modelling. The use of AutoLisp, in
particular its use in setting up the three dimensional modelling
space, and some rendering and animation, will also be
covered.
ID405  Design History 2B

Subject description
Second semester begins with abstract expression, then considers questions of national identity and Australian culture in the '50s and '60s, moves to assemblage, pop, performance art and earthworks, explores the 1960s/70s critique of high modernism and the shift to post-modernist values in painting, design and architecture.

ID501  Industrial Design 5

Subject description
Projects will be designed specifically to introduce complex issues which will challenge the student to investigate beyond the literal translation of the brief and begin to dissect the brief. Through the application of skills already learned and the confidence gained through previous practical and theoretical work, the student will be encouraged to expand their understanding of the development of ideas and apply their skills to assigned projects. The student will be expected to present concise information supported by researched material relevant to the project and to develop ideas from a rational research base. The use of models to demonstrate the concept will be required.

ID502  Technology 5

Subject description
To provide an introduction to advanced manufacturing techniques.

ID503  Professional Studies 3

Subject description
To provide an insight into the expectations and demands placed on the practising designer in industry and business.

ID505  Art & Design Culture 1A

Subject description
This subject will develop an understanding of design management including the setting up and management of a design office. Topics to be covered include basic accounting and financial planning, business planning, quotation and fee structuring, business communications, professional association and ethics in design.

ID601  Industrial Design 6

Subject description
Projects will be designed specifically to introduce complex issues which will challenge the student to investigate beyond the literal translation of the brief and begin to dissect the brief. Through the application of skills already learned and the confidence gained through previous practical and theoretical work, the student will be encouraged to expand their understanding of the development of ideas and apply their skills to assigned projects. The student will be expected to present concise information supported by researched material relevant to the project and to develop ideas from a rational research base. The use of models to demonstrate the concept will be required.

ID605  Art and Design Culture 1B

Subject description
This subject begins by looking at abstract expressionism, then considers questions of national identity and Australian culture in the '50s and '60s, moves to assemblage, pop, performance, history 1 and 2 before considering more philosophical issues and concentrates on the critique of culture. Issues looked at include design as commodity culture, the interpretation of design theories and definitions of design, new museological and shopping culture, postmodern positions on taste, style and space, and the necessity of an Australian design culture.
Design Research Skills

Number of hours per week: two hours
Prerequisites:
ID501 Industrial Design 5
ID502 Technology
ID503 Professional Studies

Subject aim
To prepare students for postgraduate research by introducing them to a range of methods and critical approaches to research and its applications in the practice of design.

Subject description
Topics pertaining to the designer, design practice, the object, marketing, manufacture, materials and process, commodity culture, taste, style, the vernacular, reader-user response, the image or product and its production will be examined via critical readings of contemporary writings and/or technical publications. Some emphasis will be placed on the construction of an Australian design history and critical discourse around each topic.

Consideration will be given to the development of research skills and methods which can be applied in both written, visual and practical forms.

Independent Study Program (I.S.P.1)

Number of hours per week: three hours
Prerequisites:
ID501 Industrial Design 5
ID502 Technology
ID503 Professional Studies 3

Subject aim
To provide an opportunity for students to enhance their program in accordance with their career aspirations.

Subject description
The independent study program is a series of subjects that will allow students a degree of choice and self-direction through the later stages of their program. Students should use these subjects to extend specific design or research investigations into their current project activities.

Industrial Design 7

Number of hours per week: eighteen hours
Prerequisites: Credit level results in all the degree level subjects or to the satisfaction of the program director and the progress committee.
ID601 Industrial Design 6
ID608 I.S.P.1
ID607 Design Research Skills
ID605 Art and Design Culture 1B

Subject aim
To examine, develop and propose solutions to identified problems through the application and knowledge gained in previous studies.

Subject description
An emphasis on the research activities associated with product design opportunities developed with participating industry sponsors, will be the focus of this subject. It is anticipated that individuals in this subject may also elect to identify, approach and develop solutions for industry. Students will be expected to develop concepts from a rational research base and consult with appropriate specialists.

Design Research Methods 1

Number of hours per week: two hours
Prerequisites: ID601 Industrial Design 6, ID608 I.S.P.1, ID607 Design Research Skills, ID605 Art and Design Culture 1B

Subject aim
To develop students research abilities in preparation for industry and postgraduate work.

Subject description
Students will select a staff member to act as a supervisor and in consultation with them, nominate an area or topic to research. Students may choose a new topic or continue with their minor research project from the previous semester and develop it further. Assistance will be given in accessing data banks and libraries at other local, interstate and overseas universities.

Students will work at their own pace investigating their topic thoroughly to produce a research paper or project, which may be in a written, visual or demonstrational form. A combination of either may be used.

Independent Study Program (I.S.P. 2)

Number of hours per week: six hours
Prerequisites: ID601 Industrial Design 6, ID608 I.S.P.1, ID607 Design Research Skills, ID605 Art and Design Culture 1B

Subject aim
To provide an opportunity for students to enhance their program in accordance with their career aspirations.

Subject description
The independent study program is a series of subjects that will allow students a degree of choice and self-direction through their program. Students should use these units to extend specific design or research investigations into their current project activities.

Industrial Design 8

Number of hours per week: sixteen hours
Prerequisites: ID701 Industrial Design 7, ID708 I.S.P.2, ID707 Design Research Methods 1

Subject aim
To examine, develop and propose solutions to identified problems.

Subject description
It is expected that all of the skills and knowledge gained in the previous studies will be utilised to develop comprehensive solutions. Building on the skills gained and extending abilities towards independence in managing complex design projects, emphasis on the research activities associated with product design opportunities developed with participating industry sponsors, will be the focus of this subject. It is anticipated that individuals in this subject may also elect to identify, approach and develop solutions for industry. Students will be expected to develop concepts from a rational research base and consult with appropriate specialists.
ID807  Design Research Methods 2
No. of hours per week: two hours
Prerequisites: ID707 Design Research Methods 1

Subject aims
To develop students research abilities in preparation for industry and postgraduate work.

Subject description
In this subject, students may elect a new topic or preferably, continue with their research project from the previous semester and develop it further. Assistance will be given to access data from libraries and manufacturers applicable to their area of research.

Students will work at their own pace investigating their topic thoroughly to produce a research paper or project, which may be in a written, visual or demonstrational form. A combination of either may be used.

ID808  Independent Study Program 3 (I.S.P. 3)
No. of hours per week: six hours
Prerequisites: ID701 Industrial Design 7, ID707 Design Research Methods 1, ID708 I.S.P. 2

Subject aim
To provide an opportunity for students to enhance their program in accordance with their career aspirations.

Subject description
The independent study program is a series of subjects that will allow the students a degree of choice and self-direction through the later stages of their program. Students should use these subjects to extend specific design or research investigations into their current project activities.

IT101  Computer Fundamentals
10 credit points
No. of hours per week: four hours

Subject aims
An understanding of the principles of operation of computer hardware and software.

The 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 credit points
No. of hours per week: four hours
Assessment: examination and assignment

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 credit points
No. of hours per week: four hours

Subject aims
The aims of this subject 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, Excel etc.

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.

Computer based data conversion: graphics, business presentation tools, integrated packages.

Case study presentations.
IT105  Behaviour and Communications in Organisations

10 credit points
No. of hours per week: four hours
Assessment: oral presentations, research project

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
Communications perception, oral presentations, assertiveness skills, negotiation skills, conflict management, and research skills.

IT201  Decision Analysis

10 credit points
No. of hours per week: four hours

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), 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 credit points
No. of hours per week: three and a half hours
Prerequisite: IT102 Introductory Programming

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, tapeldisk, file verbs.
Arithmetic: ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE.
Moves: numeric, alphanumeric, group, MOVE CORRESPONDING.
Editing: fixed insertion, floating insertion, replacement.
Data validation: IF-ELSE, nested IFs, evaluate sign and class tests, range and limit tests, compound statements, 88 levels.
Control group reporting: PERFORM, IF 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, 2-dimension tables, PERFORM VARYING, binary search, SEARCH, SEARCHALL.
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.

IT203  Business Applications & Systems 2

10 credit points
No. of hours per week: four hours
Prerequisite: IT103 Business Applications and Systems 1

Subject aims
To train students to:
- develop a simple business application using a microcomputer 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
Database management concepts: file concepts, reporting tools, Dbase III+, Dbase IV or related DBMS.
Systems development concepts: packages v. Bespoke, systems life cycle, prototyping, professional development v. 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, FC to FC links, systems integration — including general ledger, integrated software.

Case study presentations.

**IT222 Mathematics**

10 credit points  
No. of hours per week: four hours

**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.

**IT301 Systems Software 1**

16.5 credit points  
No. of hours per week: twenty-seven hours for three weeks  
Prerequisites: successful completion of the segments one and two

**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 subjects.  
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 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

**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 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.

**30 Data Base Management Systems 1**

16.5 credit points  
No. of hours per week: twenty-seven hours for three weeks  
Prerequisites: IT202 COBOL Programming and IT203 Business Applications and Systems 2

**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.
Industry Based Learning

50 credit points
Twenty weeks full-time project work in industry
Prerequisite: satisfactory completion of the subjects of the first three segments

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 the 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.

Systems Software 2

10 credit points
No. of hours per week: four hours
Prerequisite: IT301 Systems Software 1

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 computers 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/AMS), 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.

Data Base Management Systems 2

10 credit points
No. of hours per week: four hours
Prerequisite: IT303 Data Base Management Systems 1

Subject aims
To build upon the concepts and techniques learned in IT303. 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.
**IT504  Data Communications 1**
10 credit points  
No. of hours per week: four hours

**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 credit points  
No. of hours per week: four hours

**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, structured design, object oriented design, interface design and evaluation, implementation, testing and maintenance.

**IT601  Systems and Information Analysis 2**
10 credit points  
No. of hours per week: three hours  
Prerequisite: IT501 Systems and Information Analysis 1

**Subject aims**
This subject will build on the technical knowledge gained in earlier subjects 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 credit points  
No. of hours per week: four hours

**Subject description**
This subject completes the study of database management systems of subjects DBMS 1 & 2. The topics studied in this subject are:
- database recovery
- database integrity
- concurrency
- database security
- distributed databases
- special purpose database machines.

**IT609  Software Engineering 2**
10 credit points  
No. of hours per week: four hours  
Prerequisite: Software Engineering 1

**Subject aims**
This subject 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.
Industry Based Learning 2
50 credit points
Twenty weeks full-time project work in industry
Prerequisite: satisfactory completion of the first six
segments of the course

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, 4GLs,
expert systems.

Emerging Information Technologies
30 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

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.

Computing and the Human Context
20 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

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

Software Engineering Project
50 credit points
No. of hours per week: four hours for two
semesters
Instruction: workshop and laboratory sessions,
together with team and individual consultation
with staff as required
Assessment: by deliverable items appropriate for
the complete documentation of a software
development project, and by verbal presentation

Subject aims
The aim is to provide an opportunity for students to develop, in
a team, a significantly complex software system, using
appropriate object-oriented methodologies. The development
will encompass the whole software development process.

Subject description
The system will be developed by a team of students, following
a software process model appropriate for an object-oriented
development methodology. Students will consider all
management and technical issues associated with such a
development, and will use a state-of-the-art software
development environment to develop a system.
**IT904 The Software Process**  
12.5 credit points  
No. of hours per week: two hours  
Instruction: combination of lectures and seminars  
Assessment: assignments and a final examination  

**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.

**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  

**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 useability 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.

**IT909 Foundations of Intelligent Systems**  
12.5 credit points  
No. of hours per week: two hours  
Instruction: a combination of lectures, tutorials and laboratory sessions  
Assessment: assignments and a final examination  

**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.

**IT913 Automated Systems Development Project**  
50 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)  

**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.

**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  

**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.
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

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 UIMS, 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.

References
To be advised.

IT919  Intelligent Systems Applications
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

Subject aims
To discuss the position of expert systems in the world of artificial intelligence, and the development strategy of expert systems; to recognise and analyse commercial problems to which expert systems may generate a solution; to discuss the nature of expertise and problems and strategies of knowledge acquisition, including methods of automatic and semi-automatic knowledge acquisition.

Subject description
Expert systems — problem solving strategies, human computer interaction, extensibility; knowledge acquisition — nature of expertise, handcrafted knowledge transfer, automatic and semi-automatic knowledge acquisition; expert system applications — criteria for application selection, areas of success in the Australian context, the current position of expert systems in the world scene.

Textbooks
To be advised.

Object-Oriented Design and Programming
12.5 credit points
No. of hours per week: two hours in semester two
Instruction: lecture and workshop
Assessment: assignment and examination

Subject aims
The aim is to provide a comprehensive coverage of object-oriented systems design methods, and of techniques for object-oriented programming. In addition, software engineering principles supported by contemporary object-oriented programming language will be explored.

Subject description
Methodologies for object-oriented design; design component of object modelling technique; responsibility driven design; mechanisms for object-oriented programming; inheritance (single and multiple), dynamic binding, typing issues, programming with generics/templates, exception handling, assertions; programming environments for object-oriented development; object-oriented programming language comparisons: Smalltalk, Eiffel, C++.

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

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.
Adaptive Intelligent Systems

12.5 credit points
No. of hours per week: two hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: assignments and a final examination

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.

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

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.

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

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++ probably 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.

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

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.
**Resources for Information Systems Development**

- **IT964**
  - 12.5 credit points
  - No. of hours per week: two hours
  - Instruction: a combination of lectures, tutorials and seminars
  - Assessment: assignment and project work

**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.

**Systems Strategies**

- **IT974**
  - 12.5 credit points
  - No. of hours per week: two hours
  - Instruction: a combination of lectures, tutorials and seminars
  - Assessment: assignment and project work

**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.

**Automated Development Methods**

- **IT984**
  - 12.5 credit points
  - No. of hours per week: two hours
  - Instruction: a combination of lectures, tutorials and seminars
  - Assessment: project work

**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.

**Research Project**

- **IT993**
  - 25 credit points per semester (total 50 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.

**Subject aims**
To give students the opportunity to pursue in greater depth than in a cluster project subject 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 staff. 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.

**HCI Project**

- **IT996**
  - 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

**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 problem area (e.g., user interface development standards, practices, methodologies, user interface programming environments . . .), requiring 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.
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

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 (e.g., 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.

Environmental Engineering

10 credit points
No. of hours per week: four hours

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, CO₂, 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.

Air-conditioning

No. of hours per week: four hours for two semesters

Subject aims and description


Humidifying by steam and water.


Contaminants. Filtration and masking. Minimum fresh and total air for various situations. AS1668 Pt. 2.

Cooling load estimation. Introduction to computer methods (CAMEL, TEMPER, BUNYIP, etc.). Internal heat gains. External heat gains. Direct solar gain, fenestration, shading, coefficients, shade effects. Unsteady state conduction in building perimeters, sol-air temperature, lag and attenuation as a function of zone aspect and construction, cooling load characteristics for continuous and intermittent plant operation, instantaneous heat gain, instantaneous cooling load.

Domestic installations.


Boilers and heat generation: revise fundamentals, package boiler units, flue gas analysis, regulations regarding boilers and atmospheric pollution.

References

Refrigeration

No. of hours per week: three hours for two semesters

Subject aims and description
The vapour compression cycle. P-h diagram.

Properties of and selection criteria for primary and secondary refrigerants.

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 finnternal leakage on discharge temperature and efficiency.


Multipressure systems. Flash intercoders, staged compression and multiple evaporators. Regenerative cycles.

Evaporators and condensers. Types and applications. Heat transfer in finned coils and shell and tube exchangers.

Circuit piping layout and sizing. Pipe insulation. Filter dryers.

Liquid-suction line exchangers.

Plant operation. Air purging, charging, pump-down and defrosting.

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.


Australian Institute of Refrigeration, Air Conditioning and Heating (Journal)

ME721 Air-conditioning
No. of hours per week: four hours

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.

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

Department of Housing and Construction in association with the Australian Institute of Refrigeration, Air Conditioning and Heating.


ME722 Refrigeration
No. of hours per week: three hours

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


Australian Institute of Refrigeration, Air Conditioning and Heating (Journal)

ME729 Fluid Mechanics
No. of hours per week: three hours

Assessment: practical work and examinations

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**

**ME731 Instrumentation and System Control**

No. of hours per week: three hours

**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**

**MF110 Flight Rules and Procedures 1**

No. of hours per week: three hours week for two semesters

**Subject aims**
This subject is designed to inform students of their obligations and responsibilities as a pilot and to correctly take into account factors affecting aircraft performance during all flight modes for safe operation. This covers the theory and practice for flight operations and flight standards up to a level often in excess of that required for a Private Pilot Licence.

**Subject description**
Flight rules and air law to CPL, radio communication to CPL, introduction to air traffic control to CPL, operation performance flight planning to PPL.

**References**
Flight rules and air law:
CAA, regulations, orders, etc. with amendments
Operation performance flight planning:

**MF120 Navigation and Meteorology 1**

No. of hours per week: three hours for two semesters

**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 meterology, climatology.

**References**
CAACAAeronautical Information Publication. Civil Aviation Authority
CAA Civil Aviation Orders. Civil Aviation Authority
MF131  Aircraft General Knowledge 1  
No. of hours per week: two hours  

**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**  
Thom, T. Basic Aeronautical Knowledge Volume 1. Williamstown, Aviation Theory Centre, 1991

MF150  Occupational Health and Safety  
No. of hours per week: two hours for two semesters  

**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**  
Creighton, W.B. Understanding Occupational Health and Safety Law in Victoria, North Ryde, N.S.W., CCH Australia, 1986  
Jensen, R.S. Aviation Psychology. Aldershot, Brookfield, USA, Gower Technical, 1989  
Merritt, A. A Guidebook to Australian Occupational Health and Safety Laws. 2nd edn, North Ryde, N.S.W., CCH Australia, 1986  

MF160  Propulsion and Aircraft Systems  
No. of hours per week: three hours for two semesters  

**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**  
Thom, T. Basic Aeronautical Knowledge Volume 2. Williamstown, Aviation Theory Centre, 1991

MF170  Aviation Mathematics and Computing  
No. of hours per week: four hours for two semesters  

**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.

**Text**  

**References**  
Amor, T and Peters, D. L. Mathematics Measurements and Units. Canberra, AGPS, 1978  
Bishop, J. and Bishop, N. Pascal Precisely for Engineers and Scientists. Addison-Wesley, 1992  
Thomas, G. and Finney, R. Calculus and Analytical Geometry. 8th edn, Reading, Mass., Addison-Wesley, 1992  
Weatherburn, C.E. Elementary Vector Analysis, with Application to Geometry and Mechanics. 2nd edn, G. Bell and Sons, 1965
MF180 **Aviation Electronics**

No. of hours per week: **two hours**

**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 hours per week: **three hours**

A first year subject in the Degree in 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 Varle, C.M. Handbook of Effective Technical Communications. New York, McGraw-Hill, 1989
Pitzer, J. Style Manual. 3rd edn, Canberra, AGPS, 1986

MF210 **Flight Rules and Procedures 2**

No. of hours per week: **two hours for two semesters**

**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
Thom, T. Basic Aeronautical Knowledge Volume 2. Williamstown, Aviation Theory Centre

MF220 **Navigation and Meteorology 2**

No. of hours per week: **three hours for two semesters**

**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
Thom, T. FPL Navigation Vols. 1 and 2. Williamstown, Aviation Theory Centre, 1985
**MF231  Aircraft General Knowledge 2**

No. of hours per week: two hours for two semesters

**Subject aims**
This subject is designed to reinforce and increase a student's basic understanding of the aeronautical and aerodynamic 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:
  - Department of Transport and Communications. Aircraft Maintenance Text 4

**MF240  Theoretical Aerodynamics**

No. of hours per week: two hours

**Subject aims**
This subject is designed to develop an understanding by the student of the basic aerodynamic factors influencing the flight of an aircraft and to relate these to observed effects.

**Subject description**
Fluid properties, the standard atmosphere, ideal fluid flow, boundary layers, aerofoils, wings, force and moment coefficients, steady flight, aircraft performance, static stability.

**References**

**MF250  Human Factors and Performance**

No. of hours per week: three hours for two semesters

**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 workload 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

**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, operation, propulsion developments, inspection technology, engine balancing, engine condition, tread monitoring, managing the aging aircraft fleet.

**References**
- Dept. of Transport and Communications, Basic Functional Devices and Systems, Canberra, AGPS, 1989
MF270  Aircraft Materials and Structures
No. of hours per week: three hours for two semesters

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, stress, mechanics of materials, material properties, metal corrosion, fatigue.

References

MF280  Avionics and Electronics

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
Lancaster, D. TTL Cookbook. Indianapolis, Ind., Howard Sans, 1989

MF290  Aviation Business Management
No. of hours per week: three hours

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
CAO: 80 and 82, 100-104 series. CAA
CARS, CAA

MF300  Instrument Rating Theory
No. of hours per week: two hours

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, ARP Orders etc. with amendments

MF320  Principles of Instruction
No. of hours per week: two hours

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

MF330  Ground School
No. of hours per week: three hours

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
Weight and balance determinations
Emergency procedures

References
As supplied and depending on the particular aircraft type under consideration
**MF340 Advanced Aerodynamics**  
No. of hours per week: two hours

**Subject aims**  
This subject is designed to provide students with an advanced understanding of the aerodynamic factors influencing the flight of an aircraft and to develop theoretical explanations for observed effects.

**Subject description**  
Aircrew theory, Lanchester-Prandt (wing theory), the theory of compressible flow, supersonic Prandtl-Meyer flow, wave drag, effects of wing sweep, dynamic stability of a rigid aircraft.

**References**  

**MF350 Aviation Facilities Management**  
No. of hours per week: three hours

**Subject aims**  
This subject is designed to develop in the student advanced skills in teamwork, self-confidence and 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**  
Hurst, L. 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

**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

**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: airframe and component design, aerodynamic and performance design, environmental comfort, Noise Vibration Harshness (N.H.V.) design.

**References**  
Harris, C.M. Handbook of Noise Control. 2nd edn, New York, McGraw-Hill, 1979  
Hoerner, S. Fluid Dynamic Drag. Midland Park, N.J. [The Author], 1965  

**MF380 Aircraft Navigation and Control Systems**  
No. of hours per week: two hours for two semesters

**Subject aims**  
This subject is designed to provide students with a comprehensive understanding of 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.
MM120C  Chemistry — two and a half hours per week in first semester.

MM120D  Materials and Processes — two and a half hours per week in second semester.


Chemistry: review of chemical bonding, formulas and periodic table. Energy of chemical bonding; electrochemistry; organic and inorganic chemistry.

Materials and processes: metallic, polymeric and ceramic states; phase transformations; deformation in materials; polymeric technology. Compounding.

Energy and Processes deals with two important aspects of mechanical engineering; low grade energy conversion and heat transfer (thermodynamics) and power transmission (machine dynamics).

Subject description


Mechanical and thermodynamic efficiency.

Heat transfer. One dimensional steady state conduction in series.


Machine dynamics. Cyclics speed and energy fluctuations in rotating machinery.


Torque transmitted. Belt drives. Flat and vee sections.

Centrifugal tension.

Maximum power transmitted.

Introduction to mechanical engineering: design competition.

References
Rayner, J. Basic Engineering Thermodynamics on SI Units. 3rd edn, 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

Introduction: elements and compounds. Periodic table.

Chemical bonding states of matter.


Stoichiometry.

Electrochemistry: oxidation and reduction. Oxidation numbers.

Redox reactions.

Electrode potentials and galvanic cells. The Nernst equation.

Equilibrium constants from cell potentials. Practical galvanic cells. Corrosion and protection methods.


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, recrystallisation: polymer processing including extrusion and injection, moulding of thermosets and thermoplastics. Finishing methods: machining, grinding and polishing.

Specifications

Textbooks
Chemistry

Materials and Processes

MM123 Engineering Graphics and CAD

No. of hours per week: two and a half hours for two semesters

Instruction: lectures and tutorials

Assessment: examination (40%) and assessed work (30%)

Subject aims
The aim of the subject is to introduce 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 three 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
Instruction: lectures, tutorials, field excursions and laboratory tests
Assessment: examinations 80%, assessed work 20%

Subject aims and description
This subject aims to provide students with an understanding of services such as water (domestic and hot water and cold), electrical, space heating, sewerage; as required in domestic dwellings, together with the scientific basis of such service systems including a knowledge of thermodynamics and electricity.

References

MM180 Construction Materials

No. of hours per week: three hours
Instruction: lectures, tutorials, laboratory work
Assessment: examination 80%, reports 20%

Subject aims and description
This subject is intended to provide students with 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. This subject also provides an introduction to other materials used in buildings, and joining methods.

References
Van Vlack, L.H., Materials for Engineering, Reading, Mass., Addison-Wesley, 1982

MM209 Engineering Practices

No. of hours: totals forty-eight hours

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 normally attend a week block of full-time Engineering Practices in one non-teaching time prior to the start of second semester. 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 subjects:

- NEG049 Programmable Controllers (sixteen hours)
- N8809 Metal Fabrication and Welding (sixteen hours)
- N8806 Machining (sixteen hours)
- Electrical/Electronic Systems (twelve hours)
- Machine Shop (twelve hours)
- Welding (twelve hours)

MM210 Industrial Processes

No. of hours per week: four hours for one semester
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: four hours for one semester
Assessment: exams, assignments

Subject aims and description
Chemical engineering thermodynamics: physical equilibrium, bubble and dewpoint relations, phase diagrams, activity and activity coefficients, Gibbs Duham 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
Following a brief revision of MM211 studies, students will be introduced to real gases, the second law of thermodynamics and entropy. Applications will include vapour compression refrigeration.

Students will be introduced to fluid mechanisms, covering fluid properties, fluid statics, momentum, energy. Applications will include flow measurement techniques.

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.
- Real gases
- Second law of thermodynamics
- Reversibility
- Entropy of gases, liquids and vapours, TS 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. Fluid statics: Measurement of pressure, laws of fluid pressure, hydrostatic thrust on submerged surfaces. Basic fluid dynamics: Continuity, energy and momentum equations; application to devices for measuring velocity and flow rate. Introduction to boundary layer theory: qualitative treatment of boundary layer growth; laminar and turbulent velocity profiles.

References

MM222 Energy Systems
No. of hours per week: four hours for semester one and three hours for semester two

Subject aims and description
This subject comprises:
Thermodynamics (two hours per week).
Fluid mechanics (one hour per week).

Aim: Following a brief revision of MM121 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.

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.
Turbine isentropic efficiency.
Reciprocating engines with gas compressors.
Introduction to power cycles including Carnot, Rankine (with reheat and feed water heating), Otto, Diesel, Joule, Stirling.

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 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.

Textbooks

MM230 Engineering Materials
No. of hours per week: two hours for two Semesters

Subject aims and description
This subject 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:

References
**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 single stage transistors; input/output resistance; multi-stage 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.

**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, piezo-electric, 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**

**MM241  Applied Mechanics**

| No. of hours per week: four hours |

**Subject aims and description**
This subject 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 frame and machines. Stresses in frame members resulting from axial, shear and flexural loading. Review of bending formulas derivation.

Torsion: general treatment of elastic torsion of circular section members.

Plant stress: general treatment of plane stress including determination of principal stress planes and their orientation, maximum shear stress planes and their orientation including cases where the maximum shear stress plane 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.

**Textbook**

**MM243  Applied Mechanics**

| No. of hours per week: four hours for first semester, three hours for second semester |

**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

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

Subject aims and description
This subject is an introduction to the physiological aspects of ergonomics. In particular the student is introduced to topics that relate human performance to the physical environment. These topics are:
Introduction to Ergonomics
Introduction to ergonomics and human factors in engineering: sources of information.
Physical Environment
Noise and hearing: Functional anatomy of the ear; principles and units of sound pressure level and intensity; frequency spectrum and scales. Sight and illumination: Functional anatomy of the eye; principles and units of light; the colour spectrum and perception; methods of calculation and lighting requirements. Thermal Stress: principles, measurement and control.

Functional Anatomy
Functional description of the muscular-skeletal structure of body including joint anatomy, motion control, tactile senses; introduction to the central nervous system.

Practical Work
Noise measurement, light measurement, thermal stress measurement.

References

MM269 Services
No. of hours per week: two hours for one semester
Prerequisite: MM169 Services
Instruction: lectures, tutorials and field excursions
Assessment: examination 70%, assessed work 30%

Subject aims and description
This subject deals with the services encountered in industrial and low rise buildings. The following topics are covered: Air-conditioning: basic principles of human comfort requirements. Equipment type. Integration in buildings. Electrical services: principles of illumination, emergency and exit lights. Communication systems. Specialty services: trade waste disposal.

References
Stein, B. et al. Mechanical and Electrical Equipment for Buildings. 7th edn, Wiley, 1986

MM270 Manufacturing Technology and CAD/CAM
No. of hours per week: two hours for two semesters

Subject aims and description
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

329
MM271 Manufacturing Technology
No. of hours per week: four hours for one semester
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 practical skills;
- to develop the students report writing skills;
- Students are provided with work sheets on each practical session which detail the work to be done in that session. Topics of practical work are drawn from subjects MM270 and MM271.

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 for two semesters
Prerequisite: standard first year introductory course EE188 or a course equivalent to the computing component of EE188
Assessment: test and assignment

Subject aims and description
This subject aims to teach the development of structured programs using the Quick Basic language. The structure and function of the DOS system software such as operating systems, compilers etc. are discussed as examples. FORTRAN, Mathcad* and spreadsheets are introduced for the solution of engineering problems.

Building on the Quick Basic programming taken in the first year the students will gain programming experience in both Quick Basic 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 Quick Basic language.

Overview of and introduction to FORTRAN 77 programming.

Texts and References

MM312 Unit Operations
No. of hours per week: four hours
Assessment: practical work and examination

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

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 one-dimensional 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.
MM320  Energy Systems

No. of hours per week: four hours

Subject aims and description
This subject comprises:
Thermodynamics two and a half hours per week
Fluid mechanics one and a half hours per week.

Thermodynamics:

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
Assessment: examinations and practical work

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.

Textbook

MM330  Advanced Materials

No. of hours per week: one hour
Assessment: examinations and assignments

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. Development of expert systems.

References
Richerson, D.W. Modern Ceramic Engineering. 2nd edn, New York, Marcel Dekker, 1992
Tsay, S.W. Composites Design. 4th edn, Dayton, Ohio, Think Composites, 1992

MM331  Engineering Materials

No. of hours per week: two hours

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
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

Textbook
Part B Vibrations

References
Part B Vibrations

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

MM341B Mechanics of Machines
No. of hours per week: two hours
Subject aims and description
A basic course in vibrations covering the response of one, two and multi degree of freedom discrete linear systems (with and without damping) to free, transient and steady state harmonic forcing.


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, 1994

MM351  Design for Industry

No. of hours per week: four hours

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
Rohner, P. Industrial Hydraulic Control. 3rd edn, Melbourne, AE. Press, 1988
MM360  Ergonomics

No. of hours per week: three hours

Subject aims and description
This subject is a continuation of MM260 and expands on the material introduced in the second year subject.


References
Wickens, C.D. Engineering Psychology and Human Performance. Columbus, Merrill, 1994

MM370  Manufacturing Technology

No. of hours per week: five hours

Assessment: assignments and tests

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, dilatant, newtonian flow, time dependant flow, thixotropy, viscosity, fractional 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

Assessment: final examination and assignments

Subject aims and description
Productivity: definition, social and economic implications, waste reduction attitudes. Productivity measurement systems and benchmarking. Work study: method study, time measurement, stopwatch, predetermined methods, work sampling. Value analysis and engineering. Ergonomics: basic ideas related to method study. Laboratory exercises will be conducted on relevant issues.

References
ILO Introduction to Work Study. 3rd rev. edn, ILO, 1986
Kobayashi, I. Twenty keys to Workplace Improvement, Productivity Press, 1990
MM381  Managerial Economics
No. of hours per week: two hours
Assessment: assignments and examinations

Subject aims and description
I. Economics and finance
Topics will be drawn from:
- supply and demand, elasticity, pure competition, monopoly and oligopoly
- macroeconomics of cost, profit marginal concepts
- source of finance and cost of capital
- macroeconomic fundamentals
- banking system and credit
- national accounts, GDP, government controls
- markets, resource allocation
- share market
- economic indicators

II. Accounting
- introduction to accounting
- financial accounting and annual reports, financial ratios
- management accounting, budgeting, standard costing, historical costing, marginal costing, Activity Based Costing (ABC).

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

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 approached, query languages; overview of a database package such as DBase III-V; spreadsheetmodelling, implementation using a package.

Textbook and Reference
Saola, P. DBase III Workbook. Swinburne Bookshop

MM414  Stagewise Processes
No. of hours per week: five hours
Assessment: examinations and practical work

Subject aims and description
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-Savarit methods; batch and continuous operation.

Textbook

Reference

MM415  Mass Transfer
No. of hours per week: four hours
Assessment: examinations, laboratory work, assignments

Subject aims and description
Mass transfer theory: Fick's law of diffusion; steady state diffusion in single-phase systems; multicomponent and transient diffusion; determination of diffusion coefficients. Convective mass transfer; mass transfer coefficients; interphase mass transfer. Theory and design of continuous differential contactors; mass transfer with chemical reaction; mass, heat and momentum transfer analogies.

Textbook

Reference


**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.  

Thermodynamics:  

Gas-vapour mixtures. Psychometric change. Psychometric processes including heating, cooling, humidifying and dehumidifying.

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 streamwise 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 Mechanics and Machine Systems**  
No. of hours per week: five hours

This subject comprises three parts:  
**MM440A** Mechanics of Materials  
**MM440B** Vibration and Noise Control  
**MM440C** Control Engineering

**MM440A Mechanics of Materials**  
No. of hours per week: one and a half hours

**Subject aims and description**  
This subject provides experience and understanding of experimental methods of stress analysis and extends the student’s ability to apply basic principles to more complex problems in strength of materials.

Topics covered include:  
Thermal expansion and geometric factors, network analysis — applications of techniques to design.

**References**  
Dally, J.W. and Riley, W.F. Experimental Stress Analysis. 3rd edn, McGraw-Hill, 1991

**MM440B 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:  

**References**  
Buley, M.D. Course Notes on Industrial Noise 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**  
MM441  Control Systems

No. of hours per week: two hours
Assessment: assignment and examination

Subject aims and description
An introduction to classical methods of analysis for linear control systems.

Textbooks
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

Subject aims and description
This subject forms the second part of design for manufacture and aims to prepare students with further knowledge of the design of toothing, 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
Thomas, L.F. The Control of Quality London, Thames and Hudson, 1965

MM451  Design for Industry

No. of hours per week: four hours
Assessment: projects, assignment and/or examination

Subject aims and description
This subject is designed to allow students to develop a knowledge of design aspects of advanced industrial systems and to provide competence in project engineering work ready for their second industrial placement.
Topics covered include 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.
System flow sheeting.

References

MM460  Ergonomics

No. of hours per week: three hours
Assessment: assignments and laboratory

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
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 and mechatronic systems.

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. Amplifiers (analog + PWM), transformers, A/O and D/A conversion, opto-isolation.

References


MM471 Numerical Engineering

No. of hours per week: two hours
Assessment: tutorial assignments and examination
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.

Interpolation of data. Lagrange polynomial. Inner products and orthogonality. piecewise-linear and quadratic Lagrange interpolation. Method of weighted residuals for ordinary differential equations with homogeneous and non-homogeneous boundary conditions. Linear and cubic Hermite basis functions, applications including beam problems. Three dimension, boundary condition, mesh generation. Introduction to STRAND 6.1; zone based mesh generation, linear analysis, dynamic analysis, load and reaction recovery. Examples and assignments on finite element analysis, using a microcomputer based finite element program.

Textbooks

Burnett, D.S. Finite Element Analysis From Concepts to Applications. Reading, Mass., Addison-Wesley, 1987

References


MM472 Manufacturing Technology

No. of hours per week: five hours
Assessment: assignments and tests
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

MM480 Facilities Planning and Design

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 queueing theory, location models, will be introduced where they are needed for design of facilities.

Significance and objectives of facilities design.
Product development: market research, forecasting, design.

Textbook

References

MM481 Decision Analysis

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 Delphic 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.

Text
Shayan, E. Notes on Decision Analysis.

References

MM482 Manufacturing Operations Management

Subject aims and description
The aim is to achieve a thorough understanding of all functions and their relationship in a manufacturing system, how it is planned, operated and controlled.

Structure of a manufacturing system via models such as SADT, ICAM, IDEF 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, MRP II, methodology; introduction to a computer implemented MRP II, hands on experience; requirements for successful MRP implementations. Forecasting techniques including exponential smoothing, seasonal forecasting regression, Box Jenkins methodology.

Text

References

MM483 Engineering Management

Subject aims and description
This subject provides both an introduction to fundamental of financial and commercial engineering management and consideration of organisational environment effects on engineering outcomes. Such studies are to be reinforced by students being required to report on management and organisational aspects related to their work experience.

Topics covered include: commercial management; financial management; people management; project management.

Textbook

References
PlE supporting references

MM500 Manufacturing Project

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 the 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: total one hundred and thirty seven hours over eighteen weeks
Assessment: student seminar, technical report and performance assessment

**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 substantial 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

**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.

**Numerical Analysis**


**References**


**MM510 Combined Heat and Mass Transfer**

No. of hours per week: five hours (65 hours)
Assessment: examination, assignments and practical work

**Subject aims and description**

This subject aims 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.


**Textbook**


**Reference**


**MM511 Chemical Engineering Design**

No. of hours per week: five hours (65 hours)
Assessment: examination, practical work and assignments

**Subject aims and description**

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.

**Textbook**

Ross, G. Computer Programming Examples for Chemical Engineers. Amsterdam, Elsevier, 1987

**MM520 Engineering Science**

No. of hours per week: four hours

Thermo/fluid mechanics, energy systems and energy modelling. Students must take two of the three alternatives offered.
MM520C Energy Modelling

No. of hours per week: two hours
Instruction: lectures and tutorials
Assessment: reports

Subject aims and description
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 thermofluid 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 thermofluid modelling. Demonstrate. Select an energy system problem suitable for solution with one of the standard packages (e.g. MSCIPAL, NASTRAN, FIDAP, INFERNO). Write a report covering both tasks and addressing the above objectives.

References

MM540 Mechanics and Machine Systems

Assessment: assignment, laboratory and computer simulation

Subject aims and description

The subjects within this group aim to present more advanced topics in both the theoretical and applied aspects of the area of study.
MM540A Mechanics of Solids

No. of hours per week: two hours

Subject aims and description


Textbooks


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. 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.

Textbooks


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


MM540D Machine Systems and Simulation

No. of hours per week: two hours

Subject aims and description

The syllabus includes advanced application in the analysis, synthesis and design of machines and mechanisms. Topics are selected from the following list: Synthesis of mechanisms and linkages. Mechanism simulation, single and multi degree of freedom applications. Kinematics and kinetics of spatial mechanisms, robotic manipulators. Lubrication and wear of machines, rollers, bearings, gears and cams elasto-hydrodynamic lubrication of heavily loaded surfaces. Computer simulation; analogue and digital dynamic simulation of mechanisms, machines and engineering systems.

References

Cameron, A. Basic Lubrication Theory: 3rd edn, Chichester: Ellis Horwood, 1981

MM550 Design for Manufacture

No. of hours per week: five hours

Assessment: assignments, project work and examination

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, tutorials
Assessment: assignments and/or examination
Prerequisites: successful completion of MM451 Design for Industry

Subject aims and description
To explore aspects of the design process critical to an industry maintaining a competitive edge in a rapidly developing technological society.


Experimental Design: Scaling, Orthogonal arrays. Factorial designs. Multi-factor experiments. Determination of significant effects.

References
Dhillon, B.S. and Reiche, H, Reliability and Maintainability Management New York, Van Nostrand Rheinhold, 1985

MM551C  Equipment Life Cycle
No. of hours per week: two hours
Instruction: lectures, workshops and project consultations

Subject aims and description
This subjects 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 trialling, 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, condition maintenance and breakdown maintenance. Maintenance economics and ORTL.

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.

References
Taguchi, G. Introduction to Quality Engineering. Tokyo, Asian Productivity Organisation, 1986
MM551D  Occupational Risk

Number of hours per week: two hours
Instruction: lectures and tutorials
Assessment: assignments

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 limit 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 effects; 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, EMR, 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
Cooper, W.F. Electrical Safety Engineering. 3rd edn, London, Butterworth, 1993
Megill, RE. An Introduction to Risk Analysis. 2nd edn, Tulsa, Okla., Pennwell, 1984

MM551F  Technology Modelling

Number of hours per week: two hours
Instruction: lectures, workshop and project consultations.
Assessment: project and examination

Subject aims and description
This subject aims to develop abilities in the art of creating mathematical models of technological systems. The subject will focus on the methodologies associated with the creation of mathematical models.

Topics covered includes:
The art of modelling: mathematical and physical modelling. An introduction to the tools; materials; technique and process of modelling.
Fundamentals of modelling and diagnostics.
The modelling process: needs, objectives, understanding phenomena, literature, systems and subsystems, refinement, verification and communication; modelling materials: fundamental physical laws, constitutive relations, equations of engineering science, derived formulae, constraints, sources.
Building techniques: objectives, failure models; system diagrams; decomposing into subsystems; parameter bookkeeping; assembling the system and dimensional reasoning.
Refinement techniques: aesthetics; dimension checking; comparing magnitudes; analysing sensitivity and verifying results.
Modelling techniques in thermo-fluids engineering: theoretical and experimental; predictive; computational; experimental methods; dimensional analysis and similitude; engineering decisions in modelling and power plants, bolter design and hydraulic plants.
References

Bridgman, P.W. Dimensional Analysis. New Haven, Yale University Press, 1932

MM56 Reactor Design

No. of hours per week: two hours
Assessment: examination

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, kinematics, 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

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

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 cooperative 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
- Organisational health and safety
- 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 cooperative 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

MacLeod, R. (ed.) Technology and the Human Prospect: Essays in Honour of Christopher Freeman. London, Frances Pinter, 1986
Rothwell, P. and Zegveld, W. Innovation and the Small and the Medium Sized Firm: Their Role in Employment and in Economic Change. London, Frances Pinter, 1992
MM581  Manufacturing Systems Modelling
No. of hours per week: two hours
Assessment: assignment, projects and exam

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; optimisation 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, Wiley, 1987
Williams, H.P. Model Building in Mathematical Programming, 3rd edn, Chichester, Wiley, 1990

MM582  World Class Manufacturing Systems
No. of hours per week: two hours
Assessment: project work or assignment, exam

Subject aims and description
This subject aims to give the student an understanding of 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 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
Innovations in Management — The Japanese Corporation. IIE, 1985

MM583  Industrial Management
No. of hours per week: four hours
Assessment: assignments and examination

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, quality management and personnel appraisals, legal.

References

MM604  Design for Manufacture
No. of hours per week: four hours
Assessment: assignments, project work and examination

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 diesets for sheetmetal work: blanking, bending, deep drawing diesets design.

Dies and fixtures design: injection, 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
Handbook of Jig and Fixture Design. 2nd edn, Dearborn, Society of Manufacturing Engineers, 1989
MM605  Design for Manufacture

No. of hours per week: four hours
Assessment: assignments, project work and examination

Subject aims and description
The subject forms the second part of Design for Manufacture and aims to prepare students with further knowledge of the design of tooling, machinery and systems for quality production.

Tooling design for metalworking: economy and batch and diecasting.


Computer aided design: CAD Systems, processing and techniques. NC programming, kinematics and robotics.

References
Thomas, L.F. The Control of Quality. London, Thames and Hudson, 1965

MM606  Manufacturing Technology

No. of hours per week: five hours
Assessment: assignments and tests

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, random 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 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.


Textbooks

References

MM607  Manufacturing Technology

No. of hours per week: five hours
Assessment: assignments and tests

Subject aims and description


Textbooks
MM608 Manufacturing Technology
No. of hours per week: five hours
Assessment: assignments and tests

Subject aims and description
Automation and automated assembly: CAM, CAD, manufacturing systems. NC robots feeding orientation and placement.
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. Calendering and coating. Manufacture of PVC products. Analysis of film blowing and printing.

Textbooks

MM611 Introduction to CAD
No. of hours per week: two hours
Assessment: assignments and examination

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

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
Instruction: Lectures and tutorials

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

References
MM614        Automation and Machining

No. of hours per week: two hours
Assessment: examination and assignments

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. Review of conventional automation in machining.

Approaches to conventional automation — pneumatic, 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 work holding locations.

References

MM615        Manufacturing Automation

No. of hours per week: two hours
Assessment: examination, assignments and laboratory reports

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 automatics 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        Introduction to Computer Integrated Manufacture

No. of hours per week: two hours
Assessment: assignments and examination

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.

Reference
MM618 **Introduction to Robotics**  
No. of hours per week: two hours  
Assessment: assignment work/lab reports and examination  

**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, gluing, arc/spot welding and assembly.  
- Technical and financial evaluation of robotic installations.  
- Organisational effects of 'robotization'.  
- Robot programming: walkthrough, leadthrough and offline programming.

**References**  

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MM619 **NC Project**  
No. of hours per week: four hours  
Assessment: assignments, class participation, final report and presentation  

**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

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MM620 **Computers and Interfacing**  
No. of hours per week: two hours  
Assessment: project/seminar work and examination  

**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 and the development of mechatronic 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.

**References**  

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MM621 **Mathematics**  
No. of hours per week: two hours  
Assessment: assignments and examinations  

**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**  

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MM622 **Advanced Computer Techniques**  
No. of hours per week: two hours  
Assessment: project and assignment work, examination  

**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
- objects and object oriented programming techniques

Textbook
Any suitable Text on Borland Turbo Pascal 7.0.

MM623  Computer Based Management Systems

No. of hours per week: two hours
Assessment: assignment and project work, written test

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 MRP II packages. Further topics include project management including CPM, PERT and investment decision, simulation, decision making and total maintenance system.

References
Micro MRP Inc. MAX Manual

MM624  Management of CAD/CAM Technology

No. of hours per week: two hours
Assessment: assignment and project, written test

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

In addition to the above references, the student will be referred to relevant journal articles and papers

MM625  Machine Systems

No. of hours per week: two hours
Assessment: assignment and examination

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

MM626  Advanced Mathematics

No. of hours per week: two hours
Assessment: assignments/examination

Subject aims and description
This subject aims to develop an understanding of mathematical techniques for computer applications.

Computational methods: linear algebra with applications to sparse matrices and three dimensional geometry. Finite difference methods in ordinary and partial differential equations.

Vector transformation. Splines and parametric geometry.

References
MM627  Manufacturing Management Systems
No. of hours per week: two hours
Assessment: assignment/examination

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 MRP II philosophy, just in time, OPT are discussed in detail.

References

MM628  Control Systems and Devices
No. of hours per week: two hours
Assessment: laboratory/examination

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. Clayton, Vic., Monash University, 1994

MM629  Computers and Interfacing
No. of hours per week: two hours
Assessment: project/seminar work and examination

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
Halsall, F. Data Communications, Computer Networks and Open Systems. 3rd edn, Wokingham, England, Addison-Wesley, 1992
Tonchich, D.J. Data Communications and Networking for Manufacturing Industries. Brighton, Vic., Chrystobel Engineering, 1992

MM630  Mathematics and Computing
No. of hours per week: two hours
Assessment: assignment/examination

Subject aims and description
This subject aims to develop an understanding of mathematical and statistical techniques for computer applications.
Topics are selected from:
- 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.

References
Lapin, L.L. Probability and Statistics for Modern Engineering. 2nd edn, Boston, PWS-Kent, 1990
MM631 Machine Systems

No. of hours per week: two hours
Assessment: assignment/examination

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 NC and robot programming languages: online and offline programming of NC 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.

Introduction to fuzzy logic and neural networks.

References
Further references will be supplied by lecturer

MM632 Computer Aided Design

No. of hours per week: two hours
Assessment: assignments/project examination

Subject aims and description
This subject aims to introduce theoretical foundations of computer graphics and CAD systems and provide hands-on experience in micro CAD 3D systems.


Practical section: Further hands on micro CAD system with 3D modelling and introduction to micro CAD/CAM.

References

MM633 Advanced CAD

No. of hours per week: four hours
Assessment: assignments/project and examination

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)

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 empirical 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  

**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**

Selected papers and course notes  
Viner, D. Accident Analysis and Risk Control. Melbourne, VR Delphi, 1991

MM711  
**Quantitative Risk**

No. of hours per week: two hours  
Instruction: lectures, tutorials and workshops

**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**

Watson, C.J. et al. Statistics for Management and Economics. 5th edn, Boston, Allyn & Bacon, 1993

MM712  
**Risk Law**

No. of hours per week: two hours  
Instruction: lectures and tutorials

**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 occupants.

The role of the Australian Federal Government in health and safety legislation.


The role and standing of codes of practice and standards.

Legal implications of product guarantees, warranties and usage information.

The role of an expert witness.

Companies Act requirements of directors and officers, liabilities and consequences.

Introduction to the Building Code of Australia and Fire Regulations.

**References**

Brooks, A. Guidebook to Australian Occupational Health and Safety Laws. 3rd edn, North Ryde, N.S.W. CCH Australia, 1988  
Creighton, W.B. Understanding Occupational Health and Safety Law in Victoria. North Ryde, N.S.W., CCH Australia, 1986

MM713  
**Risk Management Principles**

No. of hours per week: two hours  
Instruction: lectures and tutorials

**Subject aims and description**

This subject aims to introduce fundamental principles related to loss prevention and to develop a basic understanding of how risk can be managed.
Risk control: concepts and definitions; organisational and risk management objectives. Overview of risk 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.

De Jonghe, P. Readings in Risk Management, Risk Transfer & Insurance. Melbourne, Swinburne University of Technology, 1983

**MM714 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**

Selected readings and course notes
Viner, D. Accident Analysis and Risk Control. Carlton South, VJR Delphi, 1991

**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**

Viner, D. Accident Analysis and Risk Control. Carlton South, VJR Delphi, 1991

**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

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, piezo-electric, resistance, inductance, and thermo-electric transducers.

Analysis of the static and dynamic performance of electro-mechanical transducers, input-output characteristics of transducers; 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

Subject aims and description
An introduction to classical methods of analysis for linear control systems.


Textbook

References

MM755 Equipment Life Cycle

No. of hours per week: two hours
Assessment: project

Subject aims and description
This subject aims to introduce students to engineering aspect 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.

Configuration: configuration control and modification. Decommissioning, disposal and system replacement.

Textbooks
To be advised

References
Byrt, W.J. and Masters, P.R. The Australian Manager. 2nd edn, Melbourne, Macmillan, 1982
Kelly, A. Maintenance Planning and Control. London, Butterworths, 1984

MM756 Chemical Engineering Design 3

No. of hours per week: two hours
Assessment: examination

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 kinematics, 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 dzevination, batch filtration, batch reactors and batch leaching and absorption, solvent extraction, ion exchange, semibatch operation.

Textbooks
Levenspiel, O. Introduction to Reaction Engineering
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 anthropology, 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

Management Practices (Health and Safety)
No. of hours per week: two hours
Instruction: lectures and tutorials

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 safety and health.

The syllabus will comprise a common subject applicable to all three streams of health and safety, plant and practice, and maintenance, followed by a subject covering specific management practice topics applicable to health and safety.

Common subject: 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 losses. 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

Risk Management Practices (Plant and Property)
No. of hours per week: two hours
Instruction: lectures and tutorials

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 plant and property.

The syllabus will comprise a common subject applicable to all three streams of health and safety, plant and practice, and maintenance, followed by a subject covering specific management practice topics applicable to health and safety.

References
Other literature to be advised

Risk Management Practices (Maintenance Engineering)
No. of hours per week: two hours
Instruction: lectures and tutorials

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 maintenance engineering.

The syllabus will comprise a common subject applicable to all three streams of health and safety, plant and practice, and maintenance, followed by a subject covering specific management practice topics applicable to health and safety.
Common subject: 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.

Maintenance: maintenance engineering defined; life cycle maintenance engineering; maintenance engineering and design; maintenance concepts; maintenance engineering analysis; testing demonstrations and evaluation, maintenance and equipment improvement; maintenance data collection and improvement; diagnosis and trouble shooting; maintenance facilities; maintenance management and control.

References

Kelly, A. Maintenance Planning and Control. London, Butterworths, 1984

MM814 Risk Technology (Health and Safety)

No. of hours per week: two hours
Instruction: lectures and visits

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 (forklift 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
Various government, industry association and union publications

MM816 Risk Technology (Maintenance)

No. of hours per week: two hours
Instruction: lectures, seminars and site visits

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 processes.

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

Beebe, R.S. Machine Condition Monitoring. 2nd edn, Victoria, Engineering Publications, 1988
Thompson, W.T. Theory of Mechanical Vibrations. Unwyn, 1987

MM815 Risk Technology (Plant and Property)

No. of hours per week: two hours
Instruction: lectures and tutorials

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

MM817 Risk Research

No. of hours per week: two hours
Instruction: lectures, group work and tutorials

Subject aims and description

This subject aims to encourage 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.
MM818  
Risk Engineering Science (Health and Safety)

No. of hours per week: two hours
Instruction: lectures and tutorials

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
Cooper, W.F. Electrical Safety Engineering. 3rd edn, London.
Butterworths, 1993
Various standards on machine safeguarding

MM819  
Risk Engineering Science (Plant and Property)

No. of hours per week: two hours
Instruction: lectures and tutorials

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 automatic suppression systems for fire control.
Electrical equipment characteristics. Explosion initiation, effects, control design criteria.

References
Lane, N. Techniques for Student Research. Melbourne, Longman Cheshire, 1989
Leedy, P.D. Practical Research: Planning and Design. 5th edn, New York, Macmillan, 1993

MM820  
Risk Engineering Science (Maintenance Engineering)

No. of hours per week: two hours
Instruction: lectures and tutorials

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

MM821  
Risk Management Practices (Health and Safety)

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description
This subject aims to provide an understanding of the practical applications of management functions 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.
Public health and safety program design and implementation.
Contingency and emergency planning; damage control strategies.

References
Mathews, J. Health and Safety at Work. 2nd edn, Sydney, Pluto Press, 1993
MM822 Risk Management Practices (Plant and Property)

No. of hours per week: two hours
Instruction: lectures and tutorials

Subject aims and description
This subject aims to provide an understanding of the practical applications of management functions arising 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.

References
Energy Guidelines for Building Owners & Managers. Current edn, Melbourne, BOMA
Kletz, T.A. Cheaper, Safer Plants or Wealth and Safety at Work. 2nd edn, Rugby, England, Institute of Chemical Engineers, 1985

MM823 Risk Management Practices (Maintenance Engineering)

No. of hours per week: two hours
Instruction: lectures and tutorials

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

MM824 Risk Technology (Health and Safety)

No. of hours per week: two hours
Instruction: lectures and tutorial workshops

Subject aims and description
This subject aims to introduce students to the risks associated with occupational hygiene factors and to emphasis control methods.

The course of study examines occupational hygiene factors, invasive mechanisms and methods of control to reduce the risk of damage to recipients.

Control and measurement aspects of occupational hygiene.

Toxicology: dose — response relationships, T1Vs 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

MM825 Risk Technology (Plant and Property)

No. of hours per week: two hours
Instruction: lectures and tutorials

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
MM826 Risk Technology (Maintenance)

No. of hours per week: two hours
Instruction: lectures, laboratory work and site visits

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, monitoring procedures.

References

MM827 Risk Project

No. of hours per week: two hours

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
Leedy, P.D. Practical Research: Planning and Design. 5th edn, New York, Macmillan, 1993

MM901 Database Technology

No. of hours per week: three hours
Assessment: assignments/examination

Subject aims and description
This subject aims to provide a conceptual framework of the database concept. The study will encompass requirements analysis, database design, implementation and query languages with emphasis on the rational paradigm. Applications specific to the manufacturing environment will be discussed.

Data structures; flat files, hierarchical, relational, network structures.
Rational databases; tables, relational algebra, keys, indexes, normalisation.
Database design; modelling reality, data dictionaries, entity relationships, CASE tools.
Implementation; SQL, QBE, 4GL, application software.

Manufacturing applications; modelling manufacturing data, graphical data, MRP II performance.
Systems requirements analysis; data flow analysis, system life cycle.

Textbook
Date, C.J. An Introduction to Database Systems. 5th edn, Reading, Mass., Addison-Wesley, 1990

Reference
Hyman, 1988

MM902 Numerical Engineering

No. of hours per week: two hours
Assessment: assignment/examination

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, D.S. Finite Element Analysis From Concepts to Applications. Reading, Mass., Addison-Wesley, 1987

References

MM903 Numerical Engineering Project

No. of hours per week: one hour
Prerequisite: MM902
Assessment: project

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

**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.

Flexible manufacturing systems (FMS); classification and coding systems; production flow analysis; computer integrated manufacturing (CIM); amplification, servo drive systems, multiple axis control systems; Interactions between computers, modelling process, use of computer packages. Characteristics of integrated, flexible manufacturing systems; 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. M/C cell design, types (single, groups) (manual, semi-integrated), FMS, 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 Computers and Interfacing**

No. of hours per week: three hours

Assessment: project/seminar work and examination

**Subject aims and description**
Advanced issues in the interfacing of computers to mechatronic systems. Power electronics, thyristors digital amplification, servo drive systems, PLCs, CNCs, robots and multiple axis control systems. Interactions between computers, electronics and motors.

**References**

**MM906/ MM907 Project Part A/ Project Part B**

No. of hours per week: project A — ten hours; project B — ten 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)

A student must complete Project Part A before enrolling for Project Part B during the course. A progress report for Project Part A is required to be submitted to the supervisor who will assign a result Pass or Not Pass before the student is accepted into Project Part B.

**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.

**MP107 Engineering Drawing**

5 credit points

No. of hours per week: two hours

**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.

**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**
This subject is 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. Mass transfer theory: Fick's Law of diffusion; steady state diffusion in single-phase systems; multicomponent and transient diffusion; determination of diffusion coefficients. 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  

**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  

**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 dewpoint 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  

**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-Savir methods.

**Textbook**


**Reference**


MP715  **Heat Transfer**

No. of hours per week: five hours  
Assessment: practical work and examination  

**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 uni-dimensional 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

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

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

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
- Ross, G. Computer Programming Examples for Chemical Engineers Amsterdam, Elsevier, 1987

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

SA203 Building Standards

5 credit points
No. of hours per week: four hours

Subject description
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/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 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 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.

SC100  Environmental Health
5 credit points
No. of hours per week: two hours
Assessment: assignment and examination

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
10 credit points
No. of hours per week: four hours (two hours of lectures and two hours of practical work)

Subject description
Cell structure and function.
Basic biochemistry and nutrition: chemical composition of the body. Structure and function of carbohydrate, protein and fat.
Practical work covering the above topics.

SC109  Biology
10 credit points
No. of hours per week: four hours
For details, see SC108 Biology.

SC127  Chemistry
10 credit points
No. of hours per week: four hours

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; volume-volume and redox calculations.
Thermochemistry; rates of chemical reactions.
Equilibria: acid/base, redox, solubility, complexation, speciation.
Organic chemistry with biochemical emphasis.
Practical work: Chemical reactions, titrations, pH measurement. Equilibria.

SC133  Chemistry
7.5 credit points
No. of hours per week: three hours
Assessment: examination and assignments

Subject description
Atomic structure, shapes of molecules, chemical bonding, periodic table of elements.
Organic chemistry — amines, aromatic compounds, amino acids, peptides, proteins, purines, pyrimidines.
Equilibria, kinetics, acid-base chemistry.

SC154  Chemistry
10 credit points
No. of hours per week: five hours

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.
Metals; properties, economic distribution and environmental aspects. Corrosion and protection of metals, crystal types and packing models.
Practical chemistry: predicting chemical reactions, equilibria, kinetics, potentiometric titration, metals, solution skills.
SC154P  Chemistry
10 credit points
No. of hours per week: three hours

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; Entalpy and Hess's Law, calorimeters.
Kinetics of chemical reactions; order, rate equation, reaction mechanism.
Organic chemistry, nomenclature, reactions and classes of compounds.
Metals; properties, economic distribution and environmental aspects. Corrosion and protection of metals, crystal types and packing models.

SC208  Biology
10 credit points
No. of hours per week: four hours

Subject description
The course 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.
Immune system: 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
10 credit points
No. of hours per week: six hours
For details see SC208 Biology.

SC252  Biological Chemistry
10 credit points
No. of hours per week: Five hours

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
20 credit points
No. of hours per week: twelve hours

Subject description
Organic chemistry: alkenes and alkynes; benzene and other aromatic compounds; alcohols, ethers; aldehydes and ketones; carboxylic acids and their derivatives; general reaction mechanisms.
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; inorganic: synthesis, reactions; organic: techniques, synthesis, reactions, characterisation of products.

SC318  Microbiology
7.5 credit points
No. of hours per week: four hours

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
10 credit points
No. of hours per week: four hours

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.

SC353 Applied Chemistry
10 credit points
No. of hours per week: four hours

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 analysers; process control.

SC360 Practical Chemistry
15 credit points
No. of hours per week: seven hours

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.

SC370 Chemistry
15 credit points
No. of hours per week: six hours

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.

SC372 Biochemistry
12.5 credit points
No. of hours per week: six hours

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.

Laboratory exercises will include quantitative spectrophotometric analysis, colorogenic assays, 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 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 include protocol interpretation and design, and calculations and interpretation of data from quantitative analyses.

SC380 Practical Chemistry
7.5 credit points
No. of hours per week: three hours

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
7.5 credit points
No. of hours per week: three hours

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 and Windows.

SC418 Microbiology
7.5 credit points
No. of hours per week: three hours

**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.

SC451 Food Microbiology
10 credit points
No. of hours per week: five hours

**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 microbial 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.).

SC460 Practical Chemistry
15 credit points
No. of hours per week: seven hours

**Subject description**
Organic techniques; syntheses, identification and characterisation of individual compounds and mixtures using chemical tests, physical measurements, gas chromatography, infra-red spectrometry and polarimetry, practical test.

SC467 Environmental Health Practice (1)
7.5 credit points
No. of hours per week: five hours

**Subject description**
Food establishment evaluation: design and construction standards, hygienic practices, auditing and registration procedures.

Cleaning and sanitisation procedures for food plant and equipment.

Liquid domestic waste management: septic systems design, installation and effluent disposal. Approval procedures.

Business communication: written communication procedures for environmental health officers (reports, business letters, menus, etc.).

Verbal communication technique. Seminar presentation.

SC468 Environmental Science
10 credit points
No. of hours per week: five hours

**Subject description**
Meteorology: atmospheric variables, measurement of humidity, air pollution, atmospheric stability, inversion, plume behaviour, local effects.


Swimming pool chemistry. Domestic chemistry: Chemistry in the household (detergents, pesticides, renovating chemicals, motor chemicals, swimming pool chemicals, proper handling and disposal of domestic chemicals).

Practical work: 20 hours. Focuses on water analysis, stream surveys and swimming pool water analysis.

SC469 Epidemiology
7.5 credit points
No. of hours per week: three hours

**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.

SC470 Chemistry
15 credit points
No. of hours per week: five hours

**Subject description**
Descriptive inorganic chemistry: selected compounds of main group elements — thermodynamics of formation, chemistry.


Infra-red spectroscopy. Coordination chemistry: fundamentals.

SC472 Biochemistry
12.5 credit points
No. of hours per week: six hours

**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 be drawn from fermentation pathways.
Written assignments will form a major part of the subject. 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 oxygen electrode.

SC473  Applied Chemistry
12.5 credit points
No. of hours per week: four hours

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.
Polymer coatings: applications of protective organic surface coatings; non-convertible and convertible surface coatings, their chemistry and properties.
Analysis and identification of polymers; differential thermal analysis; gel permeation chromatography; polymer applications of infrared and NMR spectroscopy; pyrolysis gas chromatography.
Introduction to catalysis.

SC480  Practical Chemistry
7.5 credit points
No. of hours per week: four hours

Subject description
Organic techniques; syntheses, identification and characterisation using chemical tests, physical measurements, gas chromatography, infra-red spectrometry, polarimetry and practical test.

SC490  Computers in Chemistry
7.5 credit points
No. of hours per week: three hours

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.

SC504  Human Biochemistry
4 credit points
No. of hours per week: two hours

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.

SC508  Industry Based Learning
50 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 Biochemistry/Chemistry and Applied 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.

SC509  Research Skills
7.5 credit points
No. of hours per week: two hours

Subject description
Students are introduced to research methods, both quantitative and qualitative, in preparation for a major research project.

SC553  Applied Chemistry
12.5 credit points
No. of hours per week: seven hours

Subject description
Introduction to catalysis.
Applied Organic Chemistry
Chemistry of natural products: saccharides.
Photochemistry: free radicals and their reactions; 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.

SC568  Applied Food Science and Inspection
7.5 credit points
No. of hours per week: five hours

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 credit points
No. of hours per week: four hours

Subject description
Basic ecology: definitions, ‘indicator’ organisms and their role
in ecosystems, nutrient cycles and the effects of human-made
imbalances, biological effects of heavy metals contamination,
sewage treatment, biological aspects of soil bioremediation,
case studies.

Hazardous substances and hazardous waste: overview;
underlying chemistry; types of hazardous substances and
associated environmental and health hazards (including class
labelling of dangerous goods, material safety data sheets,
human and ecotoxicity); environmental chemical processes in
the unpolluted environment (air, water and soil), nature,
Sources, transport, monitoring and removal of pollutants;
overview of Melbourne’s sewage and stormwater systems and
environment protection in Victoria; industrial waste (trade
waste, prescribed waste, priority waste) treatment and
disposal.

Contaminated sites: sources of contamination, organic, heavy
metals; site remediation including vapour extraction,
bio-remediation, stabilisation; soil washing, cap and contain,
removal and disposal.

Environmental auditing.
Case studies.

SC570  Chemistry
15 credit points
No. of hours per week: six hours

Subject description
Electrochemistry: fundamentals.
Liquid surfaces: surface chemistry and thermodynamics.
Instrumental techniques: nuclear magnetic resonance. Mass
Stereochemistry.

SC580  Practical Chemistry
7.5 credit points
No. of hours per week: three hours

Subject description
Selected experiment in electrochemistry and surface chemistry.
Qualitative analysis of an unknown liquid mixture using
distillation, physical measurements, infra-red spectra, PMR spectra, CMR spectra and mass spectra.
Stereochemistry experiment and infra-red data station experiment.

**SC590 Computers in Chemistry**

- **5.5 credit points**
- **No. of hours per week:** three hours

**Subject description**

- Databases.
- Communications.
- Instrumental data handling.

**SC604 Biotechnology**

- **6 credit points**
- **No. of hours per week:** three hours

**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.
- f) Downstream processing: a qualitative consideration of the factors and problems involved in translating laboratory findings into pilot plant and finally production plant stages.

**SC608 Industry Based Learning**

- **50 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 Biochemistry/Chemistry and Applied 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.

**SC609 Health Promotion**

- **10 credit points**
- **No. of hours per week:** two hours

**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**

- **10 credit points**
- **No. of hours per week:** five hours

**Subject description**

Extraction of metals: free energy relationships applied to metals 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. Treatment of industrial wastes: control and treatment of industrial waste. The Environmental Protection Act and its administration. Types, source and effect of pollution with regard to natural ecosystems and human health. Disposal of domestic and industrial wastes, including microbiological bases; physico-chemical and other methods. Hazardous and intractable wastes. Analysis and identification of polymers; differential thermal analysis; gel permeation chromatography; polymer applications of infrared and NMR spectroscopy; pyrolysis gas chromatography. The application of HPLC to the analysis of small molecules, amino acids, polymers, peptides and proteins. Structure of antibodies. Antigens and the immune response. Production of antibodies — polyclonal and monoclonal. Immunoassays — types and examples. Immunochromatographic techniques.
SC660 **Practical Chemistry**
12.5 credit points
No. of hours per week: seven hours in semester eight

**Subject description**
HPLC and GC/MS experiments.
Analysis of a food product using an atomic absorption spectrometer.
Project.

SC661 **Environmental Analysis and Control**
7.5 credit points
No. of hours per week: four hours

**Subject description**
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, photochemical pollution.
Case studies/field trips.

SC662 **Analytical Biochemistry**
4 credit points
No. of hours per week: two hours

**Subject description**
Radiosotope 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**
7.5 credit points
No. of hours per week: four hours

**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 credit points
No. of hours per week: two hours

**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 credit points
No. of hours per week: eight hours

**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 credit points
No. of hours per week: four hours

**Subject description**
Ion exchange and solvent extraction: principles and applications in industrial, laboratory and biochemical situations.
Organic chemistry: carboxylates, heterocyclics.
Laboratory analyzers, with specific discussion of detectors, amplification, frequency response, digital systems and clinical analyzers.

SC680 **Practical Chemistry**
5 credit points
No. of hours per week: three hours

**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**
5.5 credit points
No. of hours per week: three hours

**Subject description**
ANOVA, regression and experimental design.
Simplex optimisation.
HPLC optimisation.
Forecasting.
Project Management.

SC708 **Scientific Communication 7**
2 credit points
No. of hours per week: one hour

**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 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  

**Subject description**  

SC717  **Basic Surface Science**  
7.5 credit points  
No. of hours per week: four hours  

**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  

**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  

**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  

**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  

**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.  
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  

**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  

**Subject description**  
Analytical experiments using GC, HPLC, AA, UV/visible and IR techniques.
**SC731**  
**Practical Biochemistry**  
12.5 credit points  
No. of hours per week: six hours  
Instruction: practical work  

**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.

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**SC732**  
**Practical Work**  
12.5 credit points  
No. of hours per week: four hours  

**Subject description**  
Liquid surfaces and electrochemistry experiment.  
Qualitative analysis of an unknown liquid mixture using distillation, physical measurements, infra-red spectra, PMR spectra, CMR spectra and mass spectra.

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**SC733**  
**Practical Techniques in Colloid Science**  
7.5 credit points  
No. of hours per week: four hours for five weeks  

**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.

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**SC734**  
**Practical Techniques in Surface Science**  
7.5 credit points  
No. of hours per week: four hours for five weeks  

**Subject description**  

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**SC735**  
**Elective Practical Skills**  
7.5 credit points  
No. of hours per week: four hours for five weeks  

**Subject description**  

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**SC736**  
**Research Skills, Part 1**  
5 credit points  
No. of hours per week: two hours for five weeks  

**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.

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**SC737**  
**Research Skills, Part 2**  
5 credit points  
No. of hours per week: two hours for five weeks  

**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.

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**SC738**  
**Minor Research Project**  
7.5 credit points  
No. of hours per week: four hours for five weeks  

**Subject description**  
A minor research project carried out either at the student's place of work or at Swinburne and involving a closely supervised project of the student's choice.

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**SC739**  
**Colloid Rheology**  
7.5 credit points  
No. of hours per week: four hours for five weeks  

**Subject description**  
Simple and complex rheology. Include complex rheology using dynamic oscillatory rheology.
SC740  Chemistry of Surface Coatings  
7.5 credit points  
No. of hours per week: four hours for five weeks  

Subject description  

SC741  Physical Properties of Surface Coatings  
7.5 credit points  
No. of hours per week: four hours for five weeks  

Subject description  

SC742  Corrosion and Protection of Metals  
7.5 credit points  
No. of hours per week: four hours for five weeks  

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 subject will include some practical work on corrosion measurement and galvanic corrosion.

SC743  Food Colloids  
7.5 credit points  
No. of hours per week: four hours for five weeks  

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.

SC744  Chemistry of Surfactants  
7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisites: SC717, and SC716 is recommended  

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.

SC745  Solution Behaviour of Surfactants  
7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisites: SC717, and SC716 and SC744 are recommended  

Subject description  
Phase behaviour, diagrams and maps for surfactant 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.

SC746  Advanced DLVO Theory  
7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisite: SC716  

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.

SC747  Adsorption from Solution  
7.5 credit points  
No. of hours per week: four hours for five weeks  
Prerequisites: SC716 (SC717 is recommended)  

Subject description  
An overview of forces involved in adsorption from solution. The role of electrostatics, solvation and chemical terms. Chemical modelling (site binding). 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)

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)

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)

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

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 (Gibbs-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

Subject description

Experimental methods for measuring the thickness of an adsorbed layer. Implications of the adsorbed layer in particle stability. Design of copolymers and selection of various structural components. Application to the dispersion of pigments in various media and to polymer flocculation.

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)

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)

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.
**Surface Chemistry of Clays and Coal**

- **SC755**
  - 7.5 credit points
  - No. of hours per week: four hours for five weeks
  - Prerequisites: SC716 and SC717 (SC718 and SC719 are advised)

**Subject description**
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.

**Mineral Processing**

- **SC756**
  - 7.5 credit points
  - No. of hours per week: four hours for five weeks
  - Prerequisites: SC716 and SC717 (SC718 and SC719 are advised)

**Subject description**

**Research Project**

- **SC757**
  - 50 credit points
  - No. of hours per week: four hours throughout second and third year

**Subject description**
A research project carried either at the students 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, and may involve several students working on one major project.

**Biochemistry**

- **SC760**
  - 12.5 credit points
  - No. of hours per week: five hours
  - Instruction: lectures

**Subject description**
Students study units in human, clinical and pathological chemistry. They also study techniques of extraction of biological molecules, methods of analysis of the structure of peptides and proteins and recombinant DNA technology.
SK190  Computing for Chemists
10 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 operation system is presented. A programming language, currently QBASIC, is introduced and applied to solve problems typically encountered in chemistry.

SK290  Computer Science
10 credit points
No. of hours per week: five hours

Subject description
This is an introductory course in computing for students majoring in the physical sciences. Computing dominates the modern day practice of physics and 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 QBASIC 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

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/minicomputer hardware architecture including peripheral devices, communications, sub-systems and current technology I/O systems (graphics, OCR).

SM110  Mathematical Methods
7.5 credit points
No. of hours per week: three hours
Assessment: tests/examination and assignments

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

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 integrating competence in note taking 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 credit points per semester
No. of hours per week: five hours
Assessment: tests, examinations and assignments

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. Calculation of areas.

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.

Textbooks
SM185  Applied Statistics 1

10 credit points  
No. of hours per week: four hours  
Prerequisites: nil  
Assessment: tests/examinations and assignments.

Subject description

Data summaries — displaying and describing distributions.  
Relationship between variables — scatterplots, correlation, cross-tabulation, regression. Basic probability. Random variables. Discrete distributions; binomial, poisson, geometric, hypergeometric. Continuous distributions; exponential, normal. Comparing distributions using Q-Q plots; normal plots. Bootstrap estimation of means and proportions; confidence intervals. The sampling distribution of the mean; Central Limit Theorem. Estimation and hypothesis tests based on small and large samples. The t-distribution. Simple non-parametric methods.

Textbooks and References

Groeneveld, R.A., Introductory Statistical Methods, Boston, PWS Kent, 1988  
Ott, L. and Mendenhall, W., Understanding Statistics, 6th edn, Belmont, Calif., Duxbury Press, 1994

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%

Subject aims and description

This subject is designed to provide the students with the mathematical basis for 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

This subject covers 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 and graphs: graphs for functions of one and two variables; surfaces; derivatives and partial derivatives; indefinite integrals; integration of partial derivatives.  
Linear algebra: linear transformations, matrices and inverse matrix, determinants, solution of linear equations — Cramer's Rule and Gaussian elimination.  
Analytic geometry: algebra of vectors, dot product and cross product, vector projections, the plane, parametric specification of plane curves and curves in space, velocity and acceleration vectors, the straight line.  
Functions of several variables and complex numbers: small variation, chain rule, curve fitting, algebra of complex numbers, polar form, exponential notation, roots of complex numbers, solution of polynomial equations.  
Directional derivative, maxima and minima, hyperbolic and inverse functions.  
Integration: methods of integration, including substitution, integration by parts, partial fractions, substitution of circular or hyperbolic functions, square completion, integration using complex numbers. Applications of integration, including area, mean square, centroid, moments, volume, curved surface area.  
Differential equations: first order separable, first order linear, second order linear.  
Infinite series: Taylor's theorem, infinite series, Taylor and Maclaurin series, power series manipulation.  
Also included in the course is a choice of project work.  
Students select six from the following:  

Textbook


References

Shenk, A., Calculus and Analytic Geometry 4th edn, Glenview, Scott, Foresman, 1988

SM199P  Engineering Mathematics Pathways

No. of hours per week: five hours for first semester, four hours for second semester with an extra two weeks in each semester  
Instruction: lectures, tutorials  
Assessment: examinations, tests

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.

Basic algebra: algebraic methods, indices and logarithms, circular functions and formulae.

Functions and graphs: graphs for functions of one and two variables; surfaces; derivatives, including product, quotient and chain rule, implicit and logarithmic differentiation; partial derivatives; indefinite integrals, integration of partial derivatives.

Linear algebra: linear transformations, matrices and inverse matrix, determinants, solution of linear equations — Cramer's Rule and Gaussian elimination.

Analytic geometry: algebra of vectors, dot product and cross product, vector projections, the plane, parametric specification of plane curves and curves in space, velocity and acceleration vectors, the straight line.

Functions of several variables and complex numbers: small variation, chain rule, curve fitting, algebra of complex numbers, polar form, exponential notation, roots of complex numbers, solution of polynomial equations.

Directional derivative, maxima and minima, hyperbolic and inverse functions.

Integration: methods of integration, including substitution, integration by parts, partial fractions, substitution of circular or hyperbolic functions, square completion, integration using complex numbers. Applications of integration, including area, mean square, centroid, moments, volume, curved surface area.

Differential equations: first order separable, first order linear, second order linear.

Infinite series: Taylor's theorem, infinite series, Taylor and Maclaurin series, power series manipulation.

Also included in the course is a choice of project work.

Students select six from the following:

Minitab, Contour lines/Surfaces, Probability. Iterative methods.


**Textbook**


**References**


Shenk, A. Calculus and Analytic Geometry 4th edn, Glenview, Scott Foresman, 1988


**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: hands-on SPSS computer test, SPSS and statistics written test and exam

**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 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**

To be advised.

**SM288 Operations Research: An Introduction to Problem Solving**

10 credit points

No. of hours per week: three hours

Prerequisites: nil

Assessment: assignments and examination

**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.

Introduction to the SAS system:

The SAS system, the SAS program manager, inputting data, sorting and printing, summarising and plotting data, graphing data, transferring data and output between packages, programming in SAS, using SAS to solve linear programming and other operations research problems.

**Textbooks and References**

Journal of the Operations Research Society

SM293  **Engineering Mathematics**

No. of hours per week: three hours for two semesters

Instructions: lecturers and practical workshops

Subject aims and description

Integration and Fourier series, two port networks, impulse response.

Vector calculus — scalar and vector fields, gradient of a scalar field, potential, divergence Gauss' theorem, continuity of fluid flow, line integrals, curl, Stokes theorem, introduction to fluid dynamics.

Linear algebra — orthogonal matrices, eigenvalue 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 form queueing theory and linear programming.

**Textbook**


**References**


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

**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**

Integration and Fourier series: integration techniques, infinite integrals, repeated integrals. 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.


Double and triple integration: double integrals, triple integrals, occurence. Plane polar, cylindrical and spherical coordinates.

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.


Partial differential equations: solution by direct integration and by separation of variables. Application of boundary and initial conditions. Use of Fourier series and Fourier-Bessel series.

Probability and statistics: combinational reliability, series and parallel systems, redundancy, statistical dependence. Discrete 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

**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

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 packaged used.


Textbook

References
Ryan, B.F., Joiner, B.L. and Ryan, T.A. Minitab Handbook. 2nd edn, Boston. PWS-Kent, 1992

SM378  Design and Measurement 3

No. of hours per week: four hours day-time
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.

References

SM381  Linear Algebra and Geometry

10 credit points
No. of hours per week: three
Prerequisite: SM180
Assessment: tests/examination and assignments

Note: In any year there will be offered either SM383 only, or one or both of SM381 and SM480. Students may not receive credit for both SM383 and SM381 or SM480.

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

Mathematics Department notes
Spaces of vectors and linear equations: linear dependence; subspaces and bases. Matrices: rank; equivalence; nullspace and range.

Square matrices: eigenvalues and eigenvectors; similarity; diagonalisation of simple matrices.

Infinite sequences; tests for convergence; recurrence relations

Infinite series; tests for convergence; Taylor series; applications.

Functions of several variances; linear and quadratic approximations to general functions; stationary points; Taylor polynomials.

SM387 **Introduction to Optimisation**

10 credit points

No. of hours per week: three

Prerequisites: nil

Assessment: assignments and examination

**Subject description**

Linear and integer programming, simplex method, transportation and assignment algorithms, branch and bound methods, deterministic dynamic programming.

Computer packages such as **SAS/OR**, Lotus 123/PROPS may be used.

**Textbooks and References**

- Journal of the Operational Research Society

SM388 **Forecasting and Regression**

10 credit points

No. of hours per week: three

Prerequisites: SM185, SM288

Assessment: tests/examination and assignments

**Subject description**

Forecasting: Introduction to time series forecasting, data patterns, moving average methods, exponential smoothing methods, calculation of seasonal indices using decomposition methods, ad hoc forecasting methods, measures of accuracy. Mean Absolute Deviation, confidence intervals, analysis of error terms, computer packages such as Excel and QSB+ may be used.

Regression: Linear (single predictor) models, residual plots, checking of assumptions, tests and co-fidenc intervals for parameters. Computer packages such as **Minitab** may be used.

**Case Studies**

The students working in groups tackle an unstructured case study related to a practical situation. The case studies are drawn from consulting activities conducted by Operation Researchers and have been carefully modified for student use. An oral preliminary report on each group's progress towards a solution is expected. Before the end of the semester both oral and written reports on their proposed solution are presented.

**References**

SM395  Engineering Mathematics
No. of hours per week: three hours
Instruction: integrated instruction and practice

Subject aims and description

References

SM399  Engineering Mathematics
No. of hours per week: three hours
Instruction: integrated instruction and practice

Subject aims and description

SM404  Project Management A
10 credit points
No. of hours per week: three hours
Assessment: tests, assignments, verbal presentations and participation in tutorial classes and project teams

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 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, 4 or 5, will be required to undertake a project for a member of staff acting as a client. 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, barcharts, 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.

Preparation for employment
Review preparation of resumes and interview techniques; participate in seminars presented by fourth year students returning from Industry Based Learning.

SM480  Analysis
10 credit points
No. of hours per week: three hours
Prerequisite: SM180
Assessment: tests/examination and assignments

Note: In any year there will be offered either SM383 only, or one or both of SM381 and SM480. Students may not receive credit for both SM383 and SM381 or SM480.

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 Besel 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 credit points
No. of hours per week: three hours
Prerequisite: SM384
Assessment: tests/examination and assignments

Subject description
Inference for two independent groups. The F Test.
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^n and fractional 2^n
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 will be used.

References
Brook, R.J. and Arnold, G.C. Applied Regression Analysis and
Experimental Design. New York, Dekker, 1985
Dunn, O.J. and Clark, V.A. Applied Statistics: Analysis of Variance and
Groeneveld, R.A. Introductory Statistical Methods. Boston, PWS-Kent,
1988
Mendenhall, W. and McClave, J.T. A Second Course in Business
Statistics: Regression Analysis. 4th edn, San Francisco, Calif., Dellen,
1990
Wonnacott, T.H. and Wonnacott, R.J. Regression: A Second Course in

SM485 Distribution Theory and Estimation
10 credit points
No. of hours per week: three hours
Prerequisites: SM384
Assessment: tests/examination and assignments

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. The power of a test.
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 will be used.

Textbooks and References
To be advised.

SM487 Queueing Theory and Simulation
10 credit points
No. of hours per week: three hours
Prerequisites: nil
Assessment: assignments and examination

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.

References
Journal of the Operational Research Society
Ravindran, A., Phillips, D.T. and Solberg, J.J. Operations Research,
Winston, W.L. Operations Research: Applications and Algorithms. 3rd
eqn, Belmont, Calif., Wadsworth, 1994

SM488 Financial Modelling
10 credit points
No. of hours per week: three hours
Assessment: assignments and examination

Subject description
Financial mathematics and models, replacement theory,
corporate models, applications in banking.
Computer packages such as Lotus 123 may be used.

Textbooks and References
Bell, A. (ed.) Introductory Accounting and Finance for Management.
South Melbourne, Vic., Nelson, 1990
Journal of the Operational Research Society
Sterns, F. Economic Evaluation and Investment Decision Methods.
7th edn, Colorado, Investment Evaluations Corporation, 1990

SM493 Engineering Mathematics
No. of hours per week: two hours

Subject aims and description
Introduction to finite element methods; approximation, basis
functions, quadrature, weighted residual methods, ordinary
and partial differential equations.

References
Oxford University, 1980
Easton, A.K., Robb, P.J., and Singh, M. Approximation and the Finite
Element Method. 1995
Rafe, L. and Westergren, B. Beta Mathematics Handbook. 2nd edn,
Lund, Studentlitteratur, 1990

SM494 Engineering Mathematics
No. of hours per week: two hours
Prerequisite: SM394 Engineering Mathematics
Instruction: lectures/tutorials
Assessment: examination/tutorial assignment

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

Subject description
Introduction to finite element methods; approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.

References

SM581 Discrete Mathematics
10 credit points
No. of hours per week: three hours
Prerequisite: SM180
Assessment: tests/examination and assignments

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.

SM585 Sample Survey Design
10 credit points
No. of hours per week: three hours
Prerequisite: SM484
Assessment: tests/examination and assignments

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.
The design effect; sample size determination; EPSEM samples.
Ratio estimation;
Cluster sampling, multi-stage sampling, PPS sampling; variance estimation.
Practical issues and methods; questionnaire design; pilot surveys, mail, interviewer-based and telephone surveys; non-
sampling errors; weighting.

References
Jolliffe, F.R. Survey Design and Analysis. Chichester, Ellis Horwood, 1986

SM587 Stochastic Models
10 credit points
No. of hours per week: three hours
Assessment: assignments and examination

Subject description
Advanced queueing theory, simulation using dedicated software, stochastic inventory models, stochastic dynamic programming, stochastic scheduling models, game theory, Markov processes, reliability theory.

Textbooks and References
Journal of the Operational Research Society

SM588 Industrial Applications of Operations Research
10 credit points
No. of hours per week: three hours
Assessment: assignments and examination

Subject description
Production, scheduling, distribution, inventory control, and transportation.

Textbooks and References
Journal of the Operational Research Society

SM604 Industrial Research Project
10 credit points
No. of hours per week: three hours
Assessment: group written and oral reports

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 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 brief 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 a verbal presentation and written report are given to the client/organisation.

SM684 Time Series Analysis
10 credit points
No. of hours per week: three hours
Prerequisite: SM484
Assessment: tests/examination and assignments

Subject description
Index numbers, EDA approach to time series — methods of smoothing, Trend, season, cycle, moving averages, deseasonalised series. Modelling series — autocorrelation, lag structures.

Computer packages such as Minitab and SAS/ETS will be used.

Textbooks and References
To be advised.
To provide the appropriate reading material relevant to each student's proposed minor thesis topic.

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 queueing theory, simulation using dedicated software, stochastic inventory models, stochastic scheduling models, stochastic LP, stochastic dynamic programming.

References

Computer software
Lotus 123, SIMAN, SAS.

SM687 Applications of Modelling
10 credit points
No. of hours per week: three hours
Assessment: assignments and examination

Subject description
A study of two or three areas of applications chosen according to the expertise available within the School 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 credit points
No. of hours per week: three hours
Prerequisite: SM487
Assessment: assignments and examination

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 credit points
No. of hours per week: three hours
Assessment: assignments and examination

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/FRCP may be used.

References
Journal of the Operations Research Society

SM700 Reading Program
12.5 credit points
No formal hours
Instruction: individual supervision
Assessment: submission of a literature survey report and an oral 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 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.

Reference
Moses, I. Supervising Postgraduates. Kensington, N.S.W., HERDSA

SM703 Stochastic Processes
12.5 credit points
No. of hours per week: four hours (total 56 hours)
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 queueing 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)
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.

Computer software
MATLAB.

SM705 Computing Techniques and Packages

12.5 credit points
No. of hours per week: four hours (total 56 hours)
Instruction: class teaching, individual study program, workshops and computer laboratory sessions
Assessment: assignments 50%, examination 50%

Subject aim
To provide an indepth 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/OR, 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)
Instruction: class teaching, workshops and computer laboratory sessions
Assessment: assignments 50%, examination 50%

Subject aims
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.

SM707 Differential Equations

12.5 credit points
No. of hours per week: four hours (total 56 hours)
Instruction: classroom teaching
Assessment: assignments 30%, examination 70%

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 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 credit points  
No. of hours per week: four hours  
Instruction: class teaching, laboratory sessions  
Assessment: assignments 30%, examination 70%  

**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**  

**Computer software**  
SAS/OR.

SM711  **Research Project**  
12.5 credit points for the first semester  
25.0 credit points for the second semester  
No formal hours  
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**  
Moses, I. Supervising Postgraduates. Kensington, N.S.W., HERDSA

SM732  **Survey Research Methods**  
12.5 credit points  
No. of hours per week: four hours  
Prerequisites: SM750, SM751  

**Subject description**  
This subject aims to enable students 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 entering, coding, quality control and analysis of multiple response questions.  

**Textbooks and References**  
To be advised.

SM733  **Demographic Techniques**  
12.5 credit points  
No. of hours per week: four hours  
Prerequisite: SM742  

**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  

**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.

SM741  **Statistics and Reliability**  
No. of hours per week: two hours  

**Subject description**  

**References**  
O'Connor, P.D.T. Practical Reliability Engineering. 2nd edn, Chichester, Wiley, 1985  

SM742  **Elementary Statistical Modelling**  
12.5 credit points  
No. of hours per week: four hours  
Prerequisites: SM750, SM751  

**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 multiple regression. Introduction to 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  

**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  

**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 for *multivariate* contingency tables, logistic regression for analysing binary response data. 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  

**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. It will involve selecting an appropriate project and conducting an extensive literature search.  

**Textbooks and References**  
Depends on topic.

SM746  **Multivariate Statistics 2**  
12.5 credit points  
No. of hours per week: four hours  
Prerequisite: SM743  

**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  

(This subject is not offered every year)  

**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  

**Subject aims and description**  
This subject aims to continue the work in 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  

**Subject aims and description**  
This subject follows on from Research Methodology 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  
Instruction: computer laboratory sessions and classroom lectures  
Assessment: computer tests and assignments  

**Subject aims and description**  
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 social and health sciences.  

It includes an introduction to microcomputers, a mainstream statistical package such as SPSS and a mainstream spreadsheet such as Lotus123 or Excel.  

**References**  
To be advised.  

**Statistical packages**  
Epi Info V5 (1992)  
SPSS/PC, Version 5.1 (1991) and/or SPSS for Windows (1992)

SM751  **An Introduction to Data Analysis**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: audio visual presentations and laboratory sessions using computers and calculators  
Assessment: practical and theoretical tests  

**Subject aims and description**  
This subject aims to provide a computer based introduction to the concepts and practice of data analysis, statistical estimation and hypothesis testing.  

It includes 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**  
To be advised.

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  

**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/ASSIST, SAS/GRAFF, 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 aims and description**  
This subject aims to describe and understand some of the methodologies used in survey research carried out in the health sciences.  

The subject will include an introduction to:  
- data collection methods including questionnaire design, interview techniques (personal and telephone), mail surveys and census methods;  
- 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;  
- 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**  
To be advised.
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 technology sessions
Assessment: practical and theoretical tests

Subject aims and description
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.

This subject will include a descriptive study of the following:
- demographic disease measures including birth and death rates, fertility rates, infant mortality rates;
- rates and risks including prevalence versus incidence, point and period prevalence, cumulative incidence, person-time rates, age-standardised rates and standardised mortality rates;
- measures of association including risk differences, risk ratios, rate differences and rate ratios, odds ratios, attributable risks, population attributable risks;
- an introduction to epidemiological methods.

References
To be advised.

Computer Packages
Epi Info V5 (1992)
SPSS/PC, Version 5.1 (1991) and/or SPSS for Windows (1992)

SM756  Elementary Statistical Modelling
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 and description
This subject aims to extend the work done in Introduction to Data Analysis by further developing the concepts of statistical estimation and testing.


References
To be advised.

Statistical packages
To be advised.

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 and description
This subject aims to develop critical skills in the evaluation of public health and medical literature involving epidemiology with an emphasis on statistical and methodological analysis.

- 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.
- Confounding: identifying potential confounding: stratification and adjusted estimates, regression and multivariate adjustment, matching.
- Diagnostic tests: repeatability and validity of tests for disease, sensitivity and specificity of tests, predictive value and prevalence Bayes’ theorem.
- Screening for disease: reasons for screening, requirements for screening, prevalent and incident cases, quality of screening test.

References
To be advised.

Computer packages
To be advised.

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 and description
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.

- Analysis of risks: the binomial distribution, risk estimates, confidence intervals for proportions, risk differences, z-test and chi-square test, confidence interval for a difference, risk ratios, odds ratios, confidence interval for an odds ratio. Logistic regression. Determination of sample size.

References
To be advised.

Computer packages
To be advised.
SM1200  Mathematics 1
10 credit points per semester
No. of hours per week: four hours for two semesters
Assessment: tests/examinations and assignments

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
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; 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 coordinates
Definitions: Graphs of equations; transformation to and from Cartesian coordinates.
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-82 Graphics Calculator

SM1208  Mathematics
10 credit points in semester one and 8 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

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; 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-82 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

Subject description
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
Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by graphical and iterative methods.

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.
Integration: definite and indefinite integrals and their interpretations; integrals of standard functions; integration by substitution. Numerical integration. Calculations of areas.

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.

SM1215 Mathematical Methods
10 credit points per semester
No. of hours per week: four hours
Assessment: tests/examination and assignments

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
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.
2D polar coordinates
Definitions: Graphs of equations; transformation to and from Cartesian coordinates.

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
Anton, H., Calculus with Analytic Geometry. 4th edn, New York, Wiley, 1992

Prescribed calculator
Texas Instruments Advanced Scientific TI-82 Graphics Calculator

SM2100 Applied Statistics
8 credit points
No. of hours per week: three hours
Assessment: tests/examinations and assignments

Subject description

SM3400 Mathematical Methods
8 credit points per semester
No. of hours per week: three hours
Prerequisite: SM1200 or SM1215
Assessment: tests/examinations and assignments

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

SM3415 Mathematical Methods
8 credit points for semesters one and two
No. of hours per week: three hours
Prerequisite: SM1200 or SM1215
Assessment: tests/examinations and assignments

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**

**SP108 Physics**
10 credit points
No. of hours per week: five hours
Assessment: practical work, assignments and examination

**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

**Subject description**
Forces and energy: kinematics, Newton’s Laws, work.
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 Psychophysiology**
12.5 credit points
No. of hours per week: four hours
Assessment: examination, assignments and tutorials

**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.

**SP134 Monitoring Instrumentation**
10 credit points
No. of hours per week: five hours
Assessment: practical work, assignments and examination

**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, displacementcurrent, DC circuits.
Atomic physics: photoelectric effect, x-rays, Compton effect, photon-electron interactions, Bohr model, de Broglie matter waves.
SP135 **Monitoring Instrumentation**
10 credit points
No. of hours per week: three hours
Assessment: examination and assignments

**Subject description**

SP220 **Instrumental Science 2**
4 credit points
No. of hours per week: two hours for semester two

**Subject description**
Topics studied will include:
- further DC circuits;
- AC circuits;
- further optics — lenses, interference, diffraction etc.

SP221 **Physical Science**
8 credit points
No. of hours per week: three hours
Assessment: practical work and examination

**Subject description**
Radiation:
- electromagnetic spectrum — introductory physics of microwaves, U.V. and electromagnetic radiation.
- atomic structure — H spectrum, H atom, X-rays, thermonic 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 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 credit points
No. of hours per week: three hours
Assessment: examination and assignments

**Subject description**
Principles of scientific instrumentation.
Electrical technology: DC/AC circuits.
Transducers: mechanical and electrical devices with applications.
Radiation sources: materials and detection.
Acoustics.

SP233 **Psychophysiological Concepts**
19 credit points
No. of hours per week: eight hours
Prerequisite: SP132 Introductory Psychophysiology
Assessment: examination, assignments, tutorials and laboratory reports

**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.

SP235 **Instrumental Science**
10 credit points
No. of hours per week: four hours
Assessment: examination and assignments

**Subject description**
Principles of scientific instrumentation.
Electrical technology: DC/AC circuits.
Tranducers: mechanical and electrical devices with applications.
Radiation sources: materials and detection.
Acoustics.

SP236 **Physics**
10 credit points
No. of hours per week: four hours
Assessment: examination and assignments

**Subject description**
Principles of scientific instrumentation.
Electrical technology: DA/AC circuits.
Tranducers: mechanical and electrical devices with applications.
Radiation sources: materials and detection.
Acoustics.
SP294  **Engineering Physics**  
No. of hours per week: two hours for two semesters  
Prerequisite: EE188 Electronics, Circuits and Computing  
Instruction: lectures  
Assessment: examination/assignment  

**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.  

**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**  

SP320  **Instrumental Science 3**  
6 credit points  
No. of hours per week: three hours  
Prerequisite: SP220  
Assessment: examination and laboratory reports  

**Subject description**  
Topics studied will include:  
- basic analog electronics using operational amplifiers and discrete devices;  
- basic digital circuits — combinational logic, flip flops and their uses.  

SP324  **Biophysical Systems A**  
10 credit points  
No. of hours per week: four hours  
Prerequisite: SP1224 or equivalent  
Assessment: examination, assignments and laboratory reports  

**Subject description**  
Electrode processes: half cell potentials, charge transfer overpotential, diffusion overpotential, impedance, microelectrodes, recording arrangements.  
Membrane phenomena: Fick's laws, Nerst and Donnan equilibrium, osmosis, Goldman equation, Using flux ratio equation, 'pore' hypothesis, electrical properties transport mechanisms. Electrical and volume conduction properties of nerves.  
The action potential: the voltage clamp and the Hodgkin Huxley equations, strength-duration curves, neuropathies.  
Synaptic transmission: quantal nature of transmitter release, calcium, activation, acetylcholine receptor, excitation and inhibition in the central nervous system, pre/post synaptic inhibition, second messenger activation.  
Autonomic nervous system: structure and function, sympathetic and parasympathetic divisions, alpha and beta receptors and their blockade, purinergic nerves, co-transmission.  
Functional anatomy of the CNS, somatosensory, auditory, visual and motor systems.  

**References**  
Rhoades, R. and Pflanzer, R. Human Physiology, 2nd edn, Fort Worth, Texas, Orlands Sanders, 1992  
Enyton, A.C. Textbook of Medical Physiology, 8th edn, Philadelphia, W.B. Sanders, 1991  

SP325  **Biophysical Systems B**  
10 credit points  
No. of hours per week: four hours  
Prerequisite: SP1224  
Assessment: examination, assignments and laboratory reports  

**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.  

**References**  
Rhoades, R. and Pflanzer, R. Human Physiology, 2nd edn, Fort Worth, Texas, Orlands Sanders, 1992  
Enyton, A.C. Textbook of Medical Physiology, 8th edn, Philadelphia, W.B. Sanders, 1991  

SP331  **Neurohumoral Bases of Psychophysiology**  
23.5 credit points  
No. of hours per week: eight hours  
Prerequisite: SP232  
Assessment: examination and assignments  

**Subject description**  
Neurophysiological 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.
Subject aims
To provide a knowledge of the physiology of peripheral and central mechanisms of perception.

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 credit points
No. of hours per week: four hours
Assessment: examination

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.

Physics 5
6 credit points
No. of hours per week: two hours
Assessment: practical work and examination

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 credit points
No. of hours per week: four hours
Prerequisite: SP3410
Assessment: examination, assignments and laboratory reports

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 instrumentation functions: optical instrumentation and imagery.

Industry Based Learning
50 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 followed end-on by SP623.

Biophysics (Neurosciences A)
8 credit points
No. of hours per week: four hours
Prerequisites: SP324 and either SP424 or SP425
Assessment: examination, assignments and practical work

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.

Applied Biophysics A
8 credit points
No. of hours per week: four hours
Prerequisites: SM3415, SP325 and either SP424 or SP425
Assessment: examination and laboratory reports

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.
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.
SP527  Neurophysiology of the Normal Brain
12.5 credit points
No. of hours per week: five hours
Prerequisite: SP431
Assessment: examination and assignments
Instruction: lectures, tutorials, seminars and project consultation

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

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, neurological models for language, language disorders; assessment of aphasia, apraxia, aprosodias, neurodevelopment and language, role of left and right hemisphere, recognition of facial expression, prefrontal contributions, gender and language, memory and language.

SP531  Biophysical Systems and Techniques
12.5 credit points
No. of hours per week: four hours
Assessment: continuous, by tests and assignments

Subject description
- Physiological control mechanisms, mathematical models of physiological systems.

SP532  Clinical Monitoring Techniques
12.5 credit points
No. of hours per week: four hours
Assessment: continuous, by tests and assignments

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.

SP534  Neurophysiological Techniques
12.5 credit points
No. of hours per week: four hours
Assessment: assignments
Instruction: lectures, laboratory exercises and tutorials

Subject aims
To present a current overview of the techniques applicable to the recording and analysis of neurophysiological signals — especially those of electric or magnetic origin.

Subject description

References
- Others as advised by lecturers
Biomedical Project
12.5 credit points
No. of hours per week: four hours

Subject description
The development, construction and commissioning of a biomedical instrumentation system.

Medical Imaging
12.5 credit points
No. of hours per week: four hours
Assessment: assignments and tests

Subject description
Interrogation methods: beamed radiation (visible, R, Microwave, X-ray, Ultrasound), internally deposited radiation (gamma rays, SPECT, PETT), selective excitation (NMR). Physical qualities 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.

Reference
Webbs (ed.), *The Physics of Medical Imaging*, Bristol, 10P, 1992

Signal Processing
12.5 credit points
No. of hours per week: four hours
Assessment: assignments

Subject description
Linear and non-linear systems, response functions.
Signals, spectra, mean square estimation, orthogonality, probability, stationary and non-stationary stochastic processes.
Data, smoothing, windows, averages, filters, digital filters, recursive filters, auto-correlation, cross-correlation.
System estimation, spectral analysis, correlation and coherence, white noise methods.
Digital processing review of DFT, FFT.
Image processing: image acquisition, enhancement, restoration, reconstruction and segmentation.

Optical Instrumentation
12.5 credit points
No. of hours per week: four hours
Assessment: assignments and examination

Subject description
Incoherent and coherent light sources, types of lasers and their applications. Detectors of optical radiation, modulation of light, interferometer, lens design, fibre optics, Fourier transforms and imagery.

Nuclear Instrumentation
12.5 credit points
No. of hours per week: four hours

Subject description

Instrument Programming and Interfacing
12.5 credit points
No. of hours per week: four hours
Assessment: practical work, reports, assignments, examination

Subject description
Interfacing peripheral devices
Interfacing techniques between computers and instruments. The Forth programming language. Handshaking multi-tasking, interrupts. Real time data handling.
General purpose instrumentation bus (IEEE 488), the PC bus.

Instrument Electronics
12.5 credit points
No. of hours per week: four hours
Assessment: examination and laboratory reports

Subject description
Electronics for biomedical instrumentation, including instrumentation amplifiers, isolation, noise suppression, microprocessors, etc. Use of a computer-based circuit design and simulation techniques.

Introduction to Instrumentation Electronics
12.5 credit points
No. of hours per week: four hours
Assessment: practical work, reports and examination

Subject description
DC circuits, Ohms law, power dissipation, Kirchoff's laws, Thevenin'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 latches, 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

**Subject description**
Cell physiology, membranes and excitability, nerves and muscles. Bioenergetics. Flow and pressure. Biological control systems.

**SP653 Biophysics of Exercise**

- 12.5 credit points
- No. of hours per week: four hours
- Assessment: assignment and tests

**Subject description**

**SP601 Stand Alone Instrumentation**

- 4 credit points
- No. of hours per week: two hours
- Assessment: reports

**Subject description**
The Forth language and the design of time critical turn key instrument systems. Implementing programs in Forth: incremental compilation, stack maintenance, multiple vocabularies, interrupts, multi-tasking, special features of the language. Optimised target compilation.

**SP602 Special Project**

- 4 credit points
- No. of hours per week: two hours
- Assessment: reports

**Subject description**
This project gives students training in carrying out a technical investigation. Projects are chosen by students, after consultation with staff, from a list developed by staff. Projects are usually associated with departmental research interests, or are proposed by cooperative employers, but can be suggested by students. They are chosen to develop students' technical knowledge, self-educative skills and initiative, and may be limited by available departmental resources.

Each project requires a literature survey, and a theoretical investigation. Results, conclusions and recommendations are presented in a written report, and an oral report may also be required.

Special lectures are given on the subjects of entrepreneurial skills and technology transfer.

**SP609 Physics 6**

- 7 credit points
- No. of hours per week: two hours
- Assessment: practical work and examination

**Subject description**
Selected topics of special interest to students of biophysics and instrumental science. A selection will be made from the following areas:
- Spectroscopy: NMR, Mossbauer.
- Applications of superconductivity: Josephson junctions, particle accelerators.
- Tomography: X-ray, NMR, positron emission.
- Fibre optics: sensors, communication.
- Non linear dynamical systems.

**SP610 Instrumentation Systems A**

- 8 credit points
- No. of hours per week: four hours
- Prerequisite: SP510
- Assessment: examination and laboratory reports

**Subject description**
A fourth year subject for students majoring in scientific instrumentation. A major instrumentation project.

**SP623 Industry Based Learning**

- 50 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 SP523.
Biophysics (Neurosciences B)

8 credit points
No. of hours per week: four hours
Assessment: examination, assignments and laboratory reports
Prerequisite: SP524
Instruction: lectures, tutorials and laboratory classes

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, EOG, visual evoked response, intraocular pressure, recording, examination, pathology, assessment, adaptation, acuity, perimetry, spatial frequency.


Textbook
Rhoades, R. and Pflanzer, R. Human Physiology. 2nd edn, Fort Worth, Tex. Saunders, 1992

References
Others as advised by lecturers

Applied Biophysics B

8 credit points
No. of hours per week: four hours
Prerequisite: SP501
Assessment: examination, assignment and laboratory reports

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, infrared, microwave therapies.

Biomaterials: biocompatibility, implants in orthopaedics and dentistry, limb prostheses, cell-substrate interactions.

Functional electrical stimulation.

Environmental biophysics: overuse injury, effects of noise, electromagnetic radiation, etc. Effects of heat and cold.

Reference
Webb, S. (ed), The Physics of Medical Imaging, Bristol, Hilger, 1992

Applied Neurosciences

5 credit points
No. of hours per week: two hours
Prerequisite: SP524
Assessment: assignments and examination
Instruction: lectures and tutorials

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

Instrumentation Systems B

10 credit points
No. of hours per week: four hours
Prerequisite: SP530
Assessment: examination and CML tests

Subject description
Lectures on selected subjects of importance for instrumentation. Including: Control Theory, Radiation and Matter, Neural Networks, Transducers and Sensors, Mossbauer Spectroscopy and Fibre Optic Sensing.

Neurophysiology of Mental Disorders

12.5 credit points
No. of hours per week: five hours
Prerequisite: SP527
Assessment: examination and assignment

Subject description
Disorders of affect: theories of depression, monoamines and depression, mechanism of action of antidepressants, anxiety and benzodiazepines — GABA interactions.

Schizophrenia: causation, abnormal metabolism — monoamine systems, symptomology, diagnosis, hemispherical laterisation, frontal lobe dysfunction, investigative techniques.

Brain damage: causes, specific deficits, diagnosis.

Ageing effects on brain function: normal degeneration, cerebrovascular disease, decreased sensory stimulation, metabolic indicators.

Pathological degeneration: Parkinson’s disease, neurological disorder Alzheimer type, etc.
Psychophysiology Project

12.5 credit points
No. of hours per week: five hours
Prerequisite: SP528
Assessment: report

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.

Biosensors and Membranes

12.5 credit points
No. of hours per week: four hours
Assessment: continuous, by tests and assignments

Subject description
Physiological control mechanisms, mathematical models of physiological systems.

Cognitive Neuroscience Methodologies

12.5 credit points
No. of hours per week: four hours
Assessment: assignments
Instruction: lectures, laboratory exercises and tutorials

Subject description

Exercise Physiology

12.5 credit points
No. of hours per week: four hours
Assessment: assignments and tests

Subject description
Theoretical basis of oxygen consumption measurement, cardiac output determination by rebreathing techniques, clinical exercise testing.

Minor Project

14 credit points
No. of hours per week: four hours in first semester
Assessment: report

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.

Technology Transfer

12.5 credit points
No. of hours per week: four hours
Assessment: assignments

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.

Research Project

12.5 credit points
No. of hours per week: four hours for three semesters
Assessment: dissertation

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 credit points  
No. of hours per week: eight hours  
Assessment: dissertation  

**Subject description**  
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.

**SP751**  
**Neural Network Applications**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: mixed lectures and laboratory work  
Assessment: assignments  

**Subject description**  

**SP752**  
**Advanced Instrument Electronics**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: lectures  
Assessment: assignments  

**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 semi-custom digital and analog integrated circuits.

**SP753**  
**Optical Instrumentation**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: assignments  

**Subject description**  


**SP754**  
**Microcontroller Design Techniques**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: mixed lecture and laboratory work  
Assessment: assignments  

**Subject description**  

**SP755**  
**Nuclear Instrumentation**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: mixed lectures and laboratory work  
Assessment: assignments  

**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.

**SP756**  
**Advanced Instrumentation**  
12.5 credit points  
No. of hours per week: four hours  
Assessment: assignments  

**Subject description**  
Students may select one of a series of short topics. These topics may include: advanced imaging, materials technology, physical analysis techniques, embedded system design, information theory or transducers and sensors.

**SP822**  
**Major Project**  
50 credit points  
No. of hours per week: sixteen hours in second semester  
Assessment: report  

**Subject description**  
A major individual research project assessed by report. Projects are usually associated with school research interests, but can be suggested by students. Projects require a literature survey. Results, conclusions and recommendations are presented in a written report, and a verbal report may also be required.
SP1200  Physics
10 credit points per semester
No. of hours per week: five hours for two semesters
Assessment: practical work, assignments and examination

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.

SP1209  Physics
10 credit points per semester
No. of hours per week: five hours for two semesters
Assessment: practical work, assignments and examination

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 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

Subject description

Textbooks

SP1225  Introductory Biophysics
5 credit points per semester
No. of hours per week: two hours for two semesters
Assessment: examination, assignments and laboratory reports

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 credit points per semester
No. of hours per week: four hours for two semesters
Assessment: examination

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.
**Physics 3-4**

10 credit points per semester  
No. of hours per week: four hours for two semesters  
Assessment: examination

**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.  

**Analogue and Optical Techniques**

6 credit points per semester  
No. of hours per week: three hours for two semesters  
Prerequisite: SP1210  
Assessment: examination, laboratory tests and laboratory reports

**Subject description**  
An introduction to the bipolar junction transistor, the common emitter and differential amplifiers. Transistors as switches. Regulators. Non-linear feedback elements.  
An introduction to the field effect transistor. Common source and drain amplifiers. Other semi-conductor devices.  
Power supplies. Thyristers and Unijunction Transistors.  
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.

**Interfacing and Nuclear Techniques**

6 credit points per semester  
No. of hours per week: three hours for two semesters  
Prerequisite: SP1210  
Assessment: examinations, laboratory reports and laboratory tests

**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.  
Analog to digital and digital to analog conversion. Sample and hold. Serial communications. Interrupts. Direct memory access.  
Nuclear transducers: radiation safety, radiation detectors, basic techniques of radiation detection and measurement, pulse height analysis, spectrometry.

**Occupational Hygiene and Safety**

9 credit points  
No. of hours per week: four hours  
Assessment: examination and assignments

**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.
**Physics 5-6**
6 credit points in semester one and 7 credit points in semester two
No. of hours per week: two hours for two semesters
Assessment: practical work and examination

**Subject description**
Solid state physics: tunnel diodes, PN and PIN photodiodes, PN 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.

**Programming in Ada**
12.5 credit points in semester one and 10 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

**Subject aims**
To introduce imperative programming principles. To introduce the Ada programming language.

**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

**Computer Problem Solving**
10 credit points
No. of hours per week: four hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: practical assignments and a final examination

**Subject description**
Structured design concepts and terminology, simple sequence control structure, IF THEN ELSE control structure, DO WHILE control structure, CASE control structure, DO UNTIL control structure, relating design and code, grouping data items, table searching, an introduction to spreadsheets.

**Textbooks**
To be advised

**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 careers.

**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;
- develop 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, oral and nonverbal 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 credit points
No. of hours per week: three hours
Instruction: a combination of lectures, tutorials, laboratory sessions and reading assignments
Assessment: assignments and a final examination, computer managed learning tests

Subject description

SQ204 Formal Methods
10 credit points
No. of hours per week: three hours
Instruction: lectures and tutorials
Assessment: mid-semester test, assignment and final examination

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 SQ204, a student will be able to apply the discrete mathematics taught in the course to system modelling; interpret and construct formal specifications using the Z formal specification language.

Subject description
Introduction to formal methods; propositional calculus; proof and argument; set theory; the Z predicate calculus; relations; functions; sequence; bags; formal specification languages.

Textbooks

SQ207 Computer Organisation
10 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 combinational 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 credit points
No. of hours per week: four hours
Instruction: a combination of lectures and laboratory exercises
Assessment: programming assignments and a final examination

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

SQ300 Data Structures and Algorithms
10 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 subject 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
### Software Engineering

**No. of hours per week:** four hours  
**Instruction:** a combination of lectures, seminars, and laboratory workshops.  
**Assessment:** assignments, laboratory exercises, and a final exam

**Subject aims**  
To study project management theory and related software engineering principles, including tools, techniques, and software development strategies in managing medium to large scale software development projects.

**Subject description**  
Current topics include project planning and estimation; software documentation standards; failure of conventional projects; project monitoring and control, productivity improvement techniques, structured and prototyping project life cycles, project feasibility study, software requirements analysis, components of design activity, steps of implementation, software acceptance test generation, quality control, project risk management, Computer Aided Software Engineering (CASE), Integrated Project Support Environments (IPSE), software maintenance, safety critical systems.

### Advanced C

10 credit points  
**No. of hours per week:** three hours  
**Instruction:** a combination of lectures and laboratory sessions  
**Assessment:** assignments 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.

### Database

10 credit points  
**No. of hours per week:** three hours  
**Instruction:** lectures and laboratory sessions  
**Assessment:** assignments and final examination

**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 credit points  
**No. of hours per week:** three hours  
**Instruction:** lectures and seminars  
**Assessment:** two assignments and one exam

**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.

### Operating Systems

10 credit points  
**No. of hours per week:** three hours  
**Prerequisites:** SQ300 Data Structures and Algorithms  
**Instruction:** lectures and laboratory and tutorial sessions  
**Assessment:** a mid-semester test, an exam and lab-based exercises

**Subject description**  
To introduce the student to the fundamental concepts of an operating system and how a modern operating system is structured using these concepts. Students will look at the data structures and algorithms of real operating systems and the effect these have on the programs and environments of the operating system. Issues such as processes and multi-tasking, memory management, file systems, input/output, deadlocks, distributed systems and distributed file systems will be covered. UNIX will be used to provide an in-depth case study of a real operating system.

### Computer Science Team Project

**No. of hours per week:** four hours  
**Instruction:** software development project in a team environment  
**Assessment:** project deliverables

**Subject aims**  
To enable students to develop technical and managerial skills by practising aspects of the software engineering discipline covered in the previous semester.

**Subject description**  
The exercise of software engineering and project management tools, techniques, and methodologies by working on several medium scale projects.
**Systems Analysis**

10 credit points  
No. of hours per week: three hours  
Instruction: a combination of lectures and tutorial sessions  
Assessment: assignments and/or projects and a final examination

**Subject aims**  
To develop an understanding of the principles and practice of systems analysis — translating user needs into specifications.

**Subject description**  
The System Life Cycle; Strategic Information Systems Planning; Systems Investigation and Feasibility; Structured Analysis — Process Modelling; Structured Analysis — Data Modelling; Structured Systems Design.

**Textbooks**  
To be advised.

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**Data Communications**

10 credit points  
No. of hours per week: three hours  
Instruction: a combination of lectures and practical sessions  
Assessment: assignments and a final examination

**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.

**Textbooks**  
To be advised

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**COBOL Programming**

10 credit points  
No. of hours per week: three hours  
Instruction: lecture and practical classes  
Assessment: assignments and exam

**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**  

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**Systems Programming**

10 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**  
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.

**Textbooks**  
To be advised

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**Artificial Intelligence**

10 credit points  
No. of hours per week: three hours  
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 symbol-based AI paradigm with 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
Concurrent Programming
10 credit points
No. of hours per week: three hours
Prerequisite: SQ300 Data Structures and Algorithms
Instruction: lectures and laboratory sessions
Assessment: assignment and examination

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.

Unix Systems Programming
10 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%)

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.

Software Practice 3
10 credit points in semester one and 20 credit points in semester two
No. of hours of instruction per week: four hours in semester one, and one hour in semester two
Instruction: lectures and practical work (in first semester) and group project assessment

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.

Declarative Programming
10 credit points
No. of hours per week: three hours
Prerequisites: SQ310 or SQ300
Instruction: lectures, tutorials and laboratory sessions
Assessment: programming assignments and exam

Subject aims
By the end of the subject, 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

Industry based Learning
50 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.

Computer Architecture
10 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 CPUs; microprocessors; memory devices; input/output devices; bus structures.

Textbooks
To be advised

Team Project
20 credit points
No. of hours per week: three hours for two semesters
Instruction: Lectures and practical work
Assessment: Assignments and examination

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.
**Translator Engineering**

- **SQ601**
- **10 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

**Subject description**

Translator engineering: an introduction to translation: introduction to formal language theory, finite automata, lexical analysis, and the parsing problem. Students design a compiler for a simple language.

**Textbooks**

To be advised

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**Object Oriented Programming**

- **SQ604**
- **10 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

**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

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**Computing in the Human Context**

- **SQ606**
- **10 credit points**
- **No. of hours per week:** three hours
- **Instruction:** a combination of lecture and tutorial sessions
- **Assessment:** essay and examination

**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

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**Industry Based Learning**

- **SQ623**
- **50 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.
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 of 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

Systems Programming
12.5 credit points
No. of hours per week: four hours
Instruction: a combination of lectures and laboratory sessions
Prerequisites: approved competence in C programming
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.

Textbooks
To be advised

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

Subject aims
By the end of the subject, 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

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

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 tutorials  
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.  

**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: assignments and examination  

**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  

**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 multiplexers, 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 Subject**  
12.5 credit points  
No. of hours per week: four hours  
Instruction: a combination of lectures, seminars and individual consultation  
Assessment: seminars and essays  

**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.  

SQ904  **The Software Process**  
12.5 credit points  
No. of hours per week: two hours  
Instruction: combination of lectures and seminars  
Assessment: assignments and a final examination  

**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  

SQ906  **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  

**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
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

Subject aims
To familiarise the student with advanced computer graphics principles.

Subject description
Advanced 3-D graphics rendering; projections; colour; theory; lighting models; ray-tracing; radiosity; data representation; animation.

Textbooks
To be advised

SQ909  Foundations of Intelligent Systems
12.5 credit points
No. of hours per week: two hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: assignments and a final examination

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

SQ916  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

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 UIMS, 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

SQ924  Object-Oriented Design and Programming
12.5 credit points
No. of hours per week: two hours in semester two
Instruction: lecture and workshop
Assessment: assignment and examination

Subject aims
The aim is to provide a comprehensive coverage of object-oriented systems design methods, and of techniques for object-oriented programming. In addition, software engineering principles supported by contemporary object-oriented programming language will be explored.

Subject description
Methodologies for object-oriented design; design component of object modelling technique; responsibility driven design; mechanisms for object-oriented programming; inheritance (single and multiple), dynamic binding, typing issues, programming with generics/templates, exception handling, assertions; programming environments for object-oriented development; object-oriented programming language comparisons: Smalltalk, Eiffel, C++.

Textbooks
To be advised

SQ913  Honours Research Project
50 credit points
No. of hours per week: eight hours for two semesters
Instruction: individual consultation with a supervisor, as required
Assessment: by thesis

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.

Textbooks
To be advised
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

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; 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

Adaptive Intelligent Systems
12.5 credit points
No. of hours per week: two hours
Instruction: a combination of lectures, tutorials and laboratory sessions
Assessment: assignments and a final examination

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

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

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

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

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 ++ probably with Sun Unix) and 3GL program development using C (or C ++) and the Clndex 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.

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Procedures Relating to Student Assessment and Appeals

Preamble
The aims of these procedures are to facilitate learning, to safeguard academic standards, to ensure that assessment relates to the objectives and content of the programs 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. 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.

Academic Board believes that a variety of forms of assessment should be accepted for programs at Swinburne University of Technology to enable divisions to select those they consider most appropriate to each course.

Although these procedures concentrate chiefly on the certification aspect of assessment, Academic Board considers that the other objectives of assessment stated in section 2 below are of even greater importance in the educative process.

1. Definitions and interpretation

Academic Board
The principal academic committee of the Higher Education Divisions of the University.

Assessment categories
The range of results which may be issued for a subject.

Awarding Divisional Board
The Divisional Board responsible for making recommendations to Council for the granting of a particular award.

Awards
Includes the degrees of Doctor of Philosophy, Professional Doctorate, Master, Bachelor with Honours, Bachelor and Associate Degree, and the awards of Graduate Diploma, Diploma, and Graduate Certificate granted by Council to persons who have successfully completed a course of study accredited by Council.

Chief Examiner
The position of Chief Examiner is held by the Vice-Chancellor. The responsibilities of the Chief Examiner are currently delegated to the Divisional Pro Vice-Chancellors. If unavailable Divisional Pro Vice-Chancellors may request a member of staff to act on their behalf for the purpose of these procedures.

Convener
The academic staff member designated to convene meetings of the particular subject panel established under section 4 of these procedures.

Council
The Council of Swinburne University of Technology.

Course
A set of subjects, the completion of which makes the student eligible for the granting of an award by Council.

Examination
The formal testing, during a period specified by Academic Board, for the purpose, of students enrolled in a subject. Such an examination is subject to the control of the Academic Registrar through a designated officer.

Examination notice board
A public notice board on each Swinburne campus designated by the Academic Registrar as such.

Examination Supervisor
A person authorised by the Academic Registrar with responsibility for the supervision of a particular examination.

Examinations Officer
The member of staff of the Academic Registrar's Department who is responsible for the day-to-day administration of examinations.

Faculty Board
The Divisional Board is a properly constituted sub-committee of the Academic Board.

Head of School
A person appointed Head of School in a Higher Education Division of Swinburne University of Technology.

Irregularity
An irregularity is the unauthorised use or attempted use by or for any student of any means to gain unfair advantage in any examination, test, assignment, essay or other work, the marks for which form part of the final assessment. An irregularity includes misconduct and plagiarism.

Misconduct
A deliberate action by a student which is in breach of any directions issued by the examination supervisor, or printed on the examination material or notices. This includes taking into an examination any material with the intention of using said material to obtain an unfair advantage.

Non-Standard subject
A subject that runs in a different time frame from the official divisions/schools.

Plagiarism
Plagiarism 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. Plagiarism includes:

a) the unauthorised use of the whole or part of a computer program written by another person;

b) the use of paragraphs or sentences in essays or other assessable work which are neither enclosed in quotation marks nor properly acknowledged;

c) the paraphrasing of another's work without attribution.

Individual divisions/schools may issue supplementary statements in regard to typical examples of plagiarism. Such statements must be notified to Academic Board and published in the Handbook in the year following notification to Academic Board.

School
A School is a Higher Education Division of Swinburne University of Technology which has the responsibility for the teaching of a particular subject.

Faculty Board
The Divisional Board is a properly constituted sub-committee of the Academic Board.

It includes any properly constituted sub-committee of a Divisional Board, authorised to approve results for a subject.
4. Subject panels

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 the Higher Education Divisions of Swinburne University of Technology.

The panel shall be appointed by the appropriate Head of the School not later than the end of the second week of the semester in which teaching of the subject commences for that particular year. One of the members of the panel shall be designated Convener.

For subjects where the awarding Division is not also the teaching division, the Pro Vice-Chancellor of the awarding Division, may nominate one person to each such panel.

The names of the subject panel members shall be reported to the Divisional Boards for noting, in the case of subjects commencing in the first semester, no later than the April meeting of the Divisional Boards and, in the case of subjects commencing in the second semester, no later than the August meeting of the Divisional Boards.

The panel shall, subject to these procedures:

4.5.1 determine, prior to the issue of the first assessment of the year for the subject, the form or forms of assessment to be used;
4.5.2 determine the assessment categories to be used for the particular semester or year;
4.5.3 ensure that each panel member and each person teaching the subject is familiar with the content and objectives of the subject;
4.5.4 determine the minimum standards which a student must reach or specific work which a student must complete in order to be considered acceptable in terms of essay, assignment and/or report formats, as applicable;
4.5.5 ensure that a written statement of the requirements of assessment is prepared for all students enrolled in and attending the subject, no later than the end of the second week of teaching. This statement should include:
   • the aims and objectives of the subject
   • the methods of assessment;
   • the allocation of marks, if any, for subject participation and minimum attendance;
   • details, if relevant, of the penalties for work handed in after the stated submission date;
   • relevant information concerning what is considered acceptable in terms of essay, assignment and/or report formats, as applicable;
   • a request that students who have special needs or disabilities who may require special requirements or arrangements to contact their Divisional office;
4.6 The Convener of the subject panel shall, subject to

4.6.1 ensure that the Examinations Officer is notified in writing of the form of assessment to be used for the subject each semester;

4.6.2 ensure that the Division gives approval before a dictionary of any sort may be used in an examination. The Examinations Officer must be notified before the commencement of the examination period;

4.6.3 ensure that the written statement as detailed in section 4.5.5 is distributed to students by the end of the second week of teaching;

4.6.4 ensure that assessment for the subject is conducted;

4.6.5 allocate and supervise the drafting of examination papers, tests and assignments as required by the subject panel;

4.6.6 ensure that all examination papers submitted to the Examinations Officer and test papers for internal use are error-free prior to their issue to candidates;

4.6.7 be empowered to require from the teaching staff responsible for writing or otherwise determining a part of the assessment, a statement of minimum qualities acceptable for assessment purposes;

4.6.8 be present, or ensure that a nominee shall be present, in each examination room at the beginning of each examination in the subject to:

a) answer any questions which may arise regarding the subject matter of the examination; and

b) check each electronic calculator in the possession of a candidate to ensure that such instrument does not exceed the level of sophistication approved by the subject panel;

4.6.9 ensure that examination and test scripts and other forms of assessment are promptly marked, and the results accurately recorded;

4.6.10 ensure that marked assignments and other assessed materials are promptly returned to students;

4.6.11 ensure that a review of all retained assessed material is conducted for any candidate for whom an application for special consideration has been lodged;

4.6.12 ensure that a review of all retained assessed material is conducted for any candidate whose initial result is a fail or on the borderline between assessment categories;

5. Candidature

Candidature for assessment is established by the recording of an approved enrolment in the appropriate subject(s). No separate application is required to sit for an examination other than special examination. No result can be given in a subject for which the student is not formally enrolled or has not paid such fees or fines which are due and payable.

A student who withdraws from a standard semester or standard full year subject within seven weeks prior to the commencement of the prescribed examination period shall be deemed to have failed that subject.

A student who wishes to withdraw from a non-standard subject should consult the Divisional Manager of the awarding Division.

The Head of the awarding Division may, upon application by the student, give special permission to withdraw a student from a subject after the dates. In the absence of such special permission the result shall be recorded as 'Not Pass because of late withdrawal' (NWD).

In normal circumstances a student may withdraw from a subject one week prior to the commencement of the examination period in which the final assessment takes place.

It is the responsibility of a student to become familiar with the material contained in the academic statement as outlined in section 4.5.5 for each subject undertaken. Enquiries about the statement should be directed to the Convener of the appropriate subject panel.

1 Each division has its own procedures about late enrolment or re-enrolment.
6. Students with Special Needs and Disabilities

6.1 Students with long or short term disabilities may apply on the prescribed form to the Divisional office to seek the use of such facilities and assistance in the examination and/or assessment procedures necessary to ensure they are not disadvantaged relative to other candidates. This may include requests for extra time. The Divisional office will notify the Equity Unit, Examinations Officer and the Subject Convener of the lodgement of the form.

6.2 Where a subject has assessment requirements other than a formal examination, requests for assistance must be lodged at least two weeks prior to the final assessment submission.

6.2.1 For long term disabilities the form is lodged once only in first semester of the first year of studies and should be at least two weeks prior to the examination period.

6.2.2 For short term disabilities lodgement of the form may be at any time during the semester but should be made at least two weeks prior to the examination period if the disability exists at this time.

6.3 The Subject Convener, in consultation with the Integration Committee if appropraite to the needs of the student concerned, will decide whether to approve such assistance. In the case of disabilities occurring and advised in the two weeks prior to the examination, the Convener may recommend an alternative method of assessment to sitting the actual examination on the due date.

7. Examinations

7.1 Examination period
Academic Board shall, on the advice of the Academic Registrar, designate a period of time in each semester during which period examinations shall be held.

7.2 Timetables

7.2.1 Approximately half-way through each semester a provisional timetable for examinations to be held during that semester's examination period will be posted on the examinations notice board. It is the responsibility of students to note their provisional examination times and report immediately any clashes to the Examinations Officer.

7.2.2 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. Misreading of the timetable will not generally be accepted as sufficient reason for granting a special examination.

7.2.3 Because of the possibility of mis-hearing information University staff are not permitted to provide information about examination timetables over the telephone.

7.3 Conduct of examinations

7.3.1 Unless otherwise stated on the examination timetable, the following arrangements will apply:
(a) candidates for morning examinations will begin writing at 9.15 am. A period of reading time prior to 9.15 may be allowed. The examination timetable will show the period of reading time.
(b) candidates for afternoon examinations will begin writing at 1.45 pm. A period of reading time prior to 1.45 pm may be allowed. The examination timetable will show the period of reading time.

7.3.2 Students are required to obey the Examination Supervisor's directions for the proper conduct of the examinations.

7.3.3 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.

7.3.4 Unless with the special permission of the Examination Supervisor:
   a) no candidate may enter the examination room later than half an hour after the writing time for the examination has commenced;
   b) no candidate may leave the examination room during the first half hour after the start of the writing time; and
   c) no candidate may leave the examination room during the last fifteen minutes before the end of the examination writing time.

7.3.5 At the end of the examination students are required to remain seated until the Examination Supervisor has collected all scripts and University material.

7.3.6 Students are required to have identity cards with them at the commencement of and during an examination. The student identity cards must be produced when requested by an Examination Supervisor.

7.3.7 Unless otherwise specified all answers must be written in English.

7.3.8 Calculators or other electronic devices may not be used during reading time unless instructed by the Examination Supervisor.

7.3.9 Calculators and other electronic devices as prescribed by the subject panel may be used. Such calculators must be battery operated. Students are required to provide their own calculators, drawing instruments, writing materials and other specified equipment. Students will not be permitted to borrow or lend any equipment or material during an examination.
7.4 Examination discipline

7.4.1 When an apparent irregularity or act of misconduct is observed in an examination room, the student will be informed immediately by the Examination Supervisor that the Examination Supervisor believes the student is in breach of the examination procedures. The student will be permitted to finish the examination paper. Immediately the alleged breach is discovered the Examinations Officer will report the circumstances to the Chief Examiner, the Subject Convener and the Heads of the appropriate Schools.

7.4.2 If the alleged irregularity involves the use of unauthorised material the Examination Supervisor will take possession of such material. The material will be retained by the Academic Registrar until such time as an investigation or appeal (as set out below) is completed.

7.4.3 The Chief Examiner will assess whether or not there is prima facie evidence to suggest there has been an irregularity. If it is the belief of the Chief Examiner that there may have been an irregularity a meeting of the Examination Conduct Committee will be convened to investigate the matter.

7.5 Notice of meeting

7.5.1 The student(s) concerned must, within three working days of the Chief Examiner's decision to convene a meeting of the Examination Conduct Committee, be notified by the Examinations Officer of the meeting.

7.5.2 This notification will be in the form of a prepared statement into which the Examinations Officer inserts the relevant details for each student. The notice must contain the following:

- the date, time and venue of the examination at which the alleged breach occurred;
- the subject code and name of the examination;
- the student's name and ID number;
- the nature of the alleged breach;
- the date and time of the Examination Conduct Committee meeting;
- a description of where the student may get assistance in terms of preparing their case, including the name and telephone number of the Student Union Advocate;
- a description of how the student may respond to the allegation;
- information to the student that s/he has five working days from the date of the notice of the alleged breach to respond;
- informs the student that s/he may present any evidence or call such others relevant to the case which s/he may present to the committee.

7.5.3 The meeting will be held as expeditiously as possible but not later than five working days from the date of the notice.

7.6 Examination Conduct Committee

7.6.1 The Examination Conduct Committee shall consist of:

a) the Head of the awarding Division (Chair), or nominee
b) the Head of the School;
c) the Subject Convener;
d) the President of the Student Union, or nominee. The Examinations Officer (or other nominee of the Registrar) will be present at the meeting to act as Secretary and record the decisions.

The student concerned may be represented by an advocate, both of whom may address the Committee and provide such information or call such others as the Committee may agree. The advocate may not be a member of the Committee.

7.6.2 Powers of the Examinations Conduct Committee

If the Committee as convened according to sections 7.6 and 7.6.1 is of the view by a majority vote that an irregularity has occurred, the Committee may, taking into account the seriousness of the occurrence and circumstances, decide:

a) to take no action;
b) to reprimand the student;
c) that particular questions in the examination paper be not marked;
d) that the examination paper be cancelled;
e) that the paper for the examination in question be not marked and a fail result be recorded;
f) to suspend the student from the University for a period of time (up to two semesters);
g) that the student be suspended from further study from the course for a maximum of two years;
h) that the student be excluded from further study in the course. Such students wishing to re-enter, may apply for re-admission to the course after a minimum of two years; or,
i) to recommend to the Vice-Chancellor that the student be excluded from further study in the University. Such students wishing to re-enter, may apply for re-admission to the university after the period of exclusion.
7.6.3 Action
   a) After any meeting of the Examination Conduct Committee, the Academic Registrar will advise the student within three working days of the Committee's decision and the penalty, if any, which has been imposed.
   b) The statement must also contain the Committee's reasons and detail relevant appeal mechanisms.

8. Assessment Conduct Enquiry

8.1 When an irregularity is suspected in an assignment, essay, examination or other piece of work for assessment which is not under the control of the Academic Registrar as defined above, the member of staff who detects the apparent irregularity will inform the Chief Examiner, the Subject Convener and the Head of School as soon as the irregularity is identified.

8.2 The Chief Examiner will assess whether or not there is prima facie evidence to suggest there has been an irregularity. If it is the belief of the Chief Examiner that there may have been an irregularity a meeting of the Assessment Conduct Committee will be convened to investigate the matter.

8.3 Assessment Conduct Committee

8.3.1 The Assessment Conduct Committee shall consist of:
   a) the Head of the awarding Division (Chair), or nominee;
   b) the Head of the School;
   c) the Subject Convener; and
   d) the President of the Student Union or nominee.

8.3.2 If the Committee as convened according to sections 8.3 and 8.3.1 is of the view by a majority vote that an irregularity has occurred, the Committee may, taking into account the seriousness of the occurrence and circumstances, decide:
   a) to take no action;
   b) to reprimand the student;
   c) that particular questions in the assignment, essay or other piece of work be not marked;
   d) that the assignment, essay or other piece of work be cancelled;
   e) that the assignment, essay or other piece of work be not marked and a fail result be recorded;
   f) to suspend the student from the University for a period of time (up to two semesters);
   g) that the student be suspended from further study from the course for a maximum of two years;
   h) that the student be excluded from further study in the course. Such students wishing to re-enter, may apply for re-admission to the course after a minimum of two years; or,
   i) to recommend to the Vice-Chancellor that the student be excluded from further study in the University. Such students wishing to re-enter, may apply for re-admission to the university after the period of exclusion.

8.3.3 Action
   a) After any meeting of the Assessment Conduct Committee, the Academic Registrar will advise the student within three working days of the Committee's decision and the penalty, if any, which has been imposed.
   b) The statement must also contain the Committee's reasons and detail relevant appeal mechanisms.

9. Appeals

A student shall have the right of appeal against the decision and/or the penalty imposed under sections 7.6 and 8. A written appeal must be lodged with the Academic Registrar within ten working days of the student being notified of the penalty imposed. The appeal will be heard by an Appeals Committee constituted for the purpose.

9.1 Examination and Assessment Conduct Appeals Committee

9.1.1 The Appeals Committee shall consist of:
   a) a Chair nominated by the Chair of the Academic Board;
   b) the President of the Student Union, or nominee;
   c) one member of the academic staff of the Higher Education Divisions of the University selected by the Chair of the Academic Board, from a School other than that in which the student has been taught; provided that no member of the Appeals Committee shall have been a party to the original investigation.

The Chair of the original committee, and the Subject Convener, must be given the opportunity to appear during the course of the hearing. The student concerned and/or his/her advocate may address the Committee and provide such information and call such others as the Committee may agree. The advocate may not also be a member of the Committee.

9.2 Powers of the Examination and Assessment Conduct Appeals Committee

9.2.1 The actions available to the Committee shall include:
   a) find the decision of the relevant Conduct Committee proved and allow the penalty imposed by that committee to stand;
   b) find the decision of the relevant Conduct Committee proved but modify the penalty, if in the circumstances, it is deemed to be too harsh;
c) find the decision of the Examinations Conduct Committee not proved and cancel the penalty imposed by it upon the student;

d) find the decision of the Examinations Conduct Committee not proved and allow the student to sit another examination should an action under c) not be sufficient to recompense the student academically;

e) find the decision of the Assessment Conduct Committee not proved and allow the student to submit further appropriate work should an action under e) not be sufficient to recompense the student academically.

The decision of the Appeals Committee will be by a majority vote.

9.3 Action

a) After any meeting of the Examination and Assessment Conduct Committees, the Academic Registrar will advise the student within three working days of the Committee's decision and the penalty, if any, which has been imposed.

b) The statement must also contain the Committee's reasons and detail relevant appeal mechanisms.

10. Results

10.1 Result categories

10.1.1 The following assessment categories will normally 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 because of late withdrawal (See section 5.2)

- Not pass/no attempt (NA)

Not pass did not present any work for assessment either by examination or other form of assessment or both.

10.1.2 Where it is not appropriate for results in a subject to be issued through the full range of categories authorised by these procedures, 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.

10.1.3 In courses in Engineering, the following result, approved by the Academic Board, may be used:

- Faculty pass (FP)

In special circumstances in courses in Engineering the following results are applicable:

- Supplementary Exam (SUP)
- Supplementary Pass (SP)
- Supplementary Fail (SN)

10.1.4 In some courses in the Division of Business, Humanities and Social Science, the following result, approved by Academic Board for use from first semester 1993, may be used to indicate that the student has passed the subject but may not proceed to a stage 1, 2 or 3 subject when the subject in which the PX is awarded is a pre-requisite.

- Terminal Pass (PX)

10.1.5 The following interim results are applicable in special circumstances:

- Special Exam (SPX) refer section 12
- Deferred (DEF) refer section 10.3
- Continuing (CON) refer section 10.4
- Exempt (EXM) See divisional procedures re: Exemptions/Advanced Standing*

*Not a result category after 1993

10.2 Processing results

10.2.1 The Subject Convener shall submit the following to the Head of School:

a) the results recommended for each student enrolled for the subject;

b) such statistics as are required by the Head of School and Divisional Board;

c) a subject report signed by the Subject Convener in a form approved by the awarding Divisional Board, including:

- certification that these procedures have been carried out;
- a statement of the assessment procedure followed;
- copies of all examinations, tests and assignments;
- copies of solutions or statements of minimum qualities; and
- an appraisal of the subject as a whole;

10.2.2 The Subject Convener 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 on the borderline between assessment categories.

10.2.3 The Head of School shall recommend for approval to the awarding Divisional Board the results of all enrolled students.

10.2.4 After the Divisional Board has approved the results, the Divisional Manager shall arrange for the official results to be recorded and delivered to the Student Administration Office.
10.2.5 Two months from the date of publication of the original results, the Divisional Manager shall notify the awarding Divisional Board of any final results (those listed in sections 10.1.1 to 10.1.3) which are outstanding. The Divisional Board must deal with the matter at its next scheduled meeting.

10.3 Deferred results

10.3.1 A deferred result may be granted only by the Divisional Board and then only when special circumstances justify the granting of an extension of time for the completion of the work prescribed for the subject. Where possible the Subject Convener should advise students of reasons for the deferred result prior to the result being published.

10.3.2 When a deferred result has been granted, the result must be finalised for notification to the awarding Divisional Board by a date not later than two months after the date of publication of the deferred result. The student and the Subject Convener shall be advised of the date and conditions set for the finalisation of the result.

10.3.3 Any extension of the period of deferment in excess of two months must have the prior approval of the awarding Divisional Board which shall fix an alternative date by which the student must have completed the requirements of the subject.

10.3.4 As soon as the final result has been determined, the Subject Convener shall submit a Result Amendment form, via the Head of School, to the Pro Vice-Chancellor for submission to the Divisional Board.

10.3.5 The Divisional Manager shall notify the Pro Vice-Chancellor of the awarding division of any deferred result which has not been finalised within two months of the date of publication of the deferment. The Divisional Board must act on the matter at its next meeting.

10.4 Continuing result

The term "continuing" may be used:

10.4.1 in those subjects in which enrolment will normally extend for more than one calendar year;

10.4.2 in cases where a result is determined on submission of a report or thesis;

10.4.3 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 fail result being recorded for the earlier period of enrolment.

"Continuing" will appear on the official examination result certificate issued to students. In the normal course of events, re-enrolment in the next semester/year will be required and no final result will be issued until the end of that semester/year.

10.5 Publication and withholding certification

10.5.1 Except by resolution of the awarding Divisional Board or as provided in section 10.2.7, the final result of assessments in a subject shall be published not later than three weeks from the end of the examination period nearest to the conclusion of the subject. In the case of a Divisional 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.

10.5.2 The Student Administration Office is the only official source for the publication and certification of results.

10.5.3 Official publication of results shall be by display in a pre-designated place on the University campus on the date or dates announced by the Academic Registrar for the release of that particular semester’s or year's results for each Division.

10.5.4 Because of the possibility of mishearing information, University staff are not permitted to provide results over the telephone.

10.5.5 A certificate of final results for the particular semester will be produced by the Student Administration Office and mailed to every enrolled student within four weeks of the publication of results.

10.5.6 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:

a) has failed to return outstanding materials borrowed from the University Library;

b) has failed to pay any fine or imposition relating to a); or

c) has failed to meet any other outstanding commitments to the University.

These conditions apply after notice to that effect had been posted by the Academic Registrar to the student at the address most recently recorded in the University records for that particular student.

10.6 Reports

10.6.1 Application for Detailed Report on assessment

Any student may, on application to the Student Administration Office within 30 days of the publication of the result of assessment for a subject, and after payment of the fee prescribed, obtain a detailed written report by the Subject Convener on any formally assessed material. The Subject Convener must complete and return the report to the
12. Special examinations

12.1 A special examination is not automatic but may be granted by the Chief Examiner under the following circumstances.

12.1.1 Where a student is absent from the whole or part of an examination due to illness or other misadventure application for a special examination must be lodged at the appropriate Divisional/ School Office not later than midday of the third working day after the day of the examination. This application must be made on the Special Examinations Form which must be signed by either a medical practitioner; a Counsellor from Student and Educational Services, Swinburne University; or other person of authority as deemed appropriate to the situation which has occurred. Later receipt of supporting documentation may be the negotiated between the student and the Division.

12.1.2 Where a student enrolled for an undergraduate qualification has obtained a pass category in all subjects except one and has made a genuine attempt, presented for and failed that subject in the final semester, or where a student has made a genuine attempt and failed, in the penultimate semester, a subject which was not again available in the final semester, the student may apply for a special examination. Applications under this clause must be lodged at the Student Administration Office not later than midday of the fifth working day after the day of the publication of the results of the subject in the final semester.

12.1.3 A genuine attempt must include fulfilment of all assessment requirements for the subject.

12.2 A special examination may be granted by a Divisional Board to a student who is enrolled on a 'single subject' basis.

12.3 Except in the case of late applications, in the event of a special exam being granted, students must be notified within five working days in advance of the sitting date.

12.4 The Division will arrange the timetable for special examinations. In general, however, special examinations will be held no later than the second teaching week of the subsequent semester.

12.5 Special examinations granted in accordance with section 12.1 must be notified to Divisional Board at its first meeting after the granting of the special examinations and the student and Subject Convener advised.

12.6 In the event that a special examination is not granted, the student, the Convener and the Head of School must be promptly informed. If the recommendation of the Head of School is not agreed to by the Chief Examiner, the Head of School must be consulted.
12.7 The Chief Examiner may not override a final decision regarding the refusal or granting of a special examination unless done in consultation with the Head of School and the Subject Convener.

12.8 When a special examination has been granted the result must be finalised in readiness for notification to the awarding Divisional Board by a date fixed by the Divisional Board, but will normally be no later than two months after the date of publication of the original result.

12.9 Any extension of that period must have the prior approval of the Pro Vice-Chancellor of the awarding Division 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 Divisional Board.

12.10 The Subject Convener must submit the result of the special examination to the Head of School in time for it to be approved by the Pro Vice-Chancellor of the awarding division before the due date. The results shall be approved by the Divisional Board and the Divisional office shall process the results and forward the candidates list to Student Administration for publication.

13. Retention of assessed work

The Head of School shall arrange for the retention of all final examination scripts and any other assessed material which is not normally returned to students for a period of not less than six calendar months after the publication of results. After this period, material may be destroyed in accordance with Public Records Office procedures.

14. Confidentiality

All results, and decisions associated with dealings relating to examination/assessment irregularities, and any appeals arising, are confidential. Where such alleged breaches or irregularities are dismissed, all documentation shall be destroyed.

15. Verification of documents

The uttering of forged or false documents or statements in support of any claim under the assessment procedures shall be deemed to be a breach of the regulations.

16. Procedures for review and appeal

16.1 Any student or group of students has the right to seek a review of any aspect of the assessment procedure.

16.2 In the case of assessment and exclusion detailed procedures are set out in sections 17 and 18 respectively.

16.3 Issues falling outside those areas should be dealt with in accordance with section 19. Such issues might include an occurrence or matter in which the student believes he/she has been treated unfairly or has been disadvantaged academically.

17. Assessment review

17.1 Students who are dissatisfied with any aspect of their assessment should first contact the relevant member of the teaching staff to discuss the matter informally.

17.2 If no resolution follows, the student should submit in writing to the Head of School, a brief outline of the circumstances.

17.3 The Head of School shall advise the member of staff involved in the assessment, and shall nominate another staff member to re-assess and report on the student's work.

17.4 In the case where the staff member is also the Head of School, the Pro Vice-Chancellor may nominate another member of staff of the University or a member of staff from the same discipline in another institution to undertake a re-assessment, and report on the student's work.

17.5 A written report on the re-assessment is to be given to the student.

17.6 If the student is not satisfied with the resolution proposed under section 17.5, notice to that effect must be sent by the student to the Academic Registrar within ten working days of the date of the advice received under section 17.5. A meeting of the Assessment Appeals Committee will be convened.

17.7 Assessment Appeals Committee

All appeals will be presented to the Assessment Appeals Committee.

17.7.1 The Committee will comprise:

a) The Vice-Chancellor's nominee from within the Chancellery who will act as Chair;

b) A representative of the Student Union nominated by the President of the Union; and

c) A member of the academic staff of the Higher Education Divisions of the University chosen by the Chair of Academic Board. The person so chosen shall not be from the Division concerned.

The Academic Registrar (or nominee) will attend and act as Secretary.

17.7.2 The written report, compiled by the Head of School under section 17.5 will be forwarded by the Head of School to the Chair of the Committee.

17.7.3 The student or a representative of the Division may submit any other written material to the Committee in support of their case. Any additional evidence so provided shall be copied to the other party or parties in the appeal.

17.7.4 Students invited to attend a meeting of the Committee may be represented by an advocate who may not be a member of the Appeals Committee.

17.7.5 The student and a representative of the Division separately must be given the opportunity to appear during the course of the hearing.
17.8 The Appeals Committee shall investigate the issue in the following manner:

17.8.1 The Committee will meet within seven working days of the day the appeal is made to the Academic Registrar. It will consider all written documentation including the written statements of the student and staff member and the written statement of any witnesses.

17.8.2 The Committee may call before it the student and other parties considered appropriate by the Committee.

17.8.3 Committee decisions should be reached through a majority vote or by agreement between the members, all of whom have equal voting rights.

17.9 Actions available to Assessment Appeal Committee

The actions available to the Assessment Appeal Committee shall include:

a) dismissing the case,
b) upholding the case, and c) or d) one as applicable:
c) allowing the student to re-sit a formal examination or submit further written work
d) reparation to the student for loss of any academic credit or achievement
e) recommend to the Head of School (or Pro Vice-Chancellor) to discuss aspects of the appeal with the staff member concerned.

18. Exclusions Appeal

A student who has been excluded by a Division for unsatisfactory progress has a right to appeal against the decision. Such appeals must be lodged in writing with the Academic Registrar within ten working days of the date of the letter advising the student of the exclusion. Appeals will be heard according to the procedures detailed below.

18.1 Exclusions Appeal Committee

All appeals will be presented to the Exclusions Appeals Committee.

18.1.1 The Committee will comprise:
a) the Vice-Chancellor's nominee from within the Chancellery who will act as Chair;
b) a representative of the Student Union nominated by the President of the Union; and
c) a member of the academic staff of the Higher Education Divisions of the University chosen by the Chair of Academic Board. The person so chosen shall not be from the Division concerned.

The Academic Registrar (or nominee) will attend and act as Secretary.

18.1.2 The student or a representative of the Division may submit any other written material to the Committee in support of their case. Any additional evidence so provided shall be copied to the other party or parties in the appeal.

18.1.3 The student and a representative of the Division separately must be given the opportunity to appear during the course of the hearing.

18.1.4 Students invited to attend a meeting of the Committee, may be represented by an advocate who may not be a member of the Appeals Committee.

18.1.5 Upon a hearing under Section 16 the Exclusions Appeals Committee may:
a) confirm the exclusion or condition in respect of which the application was made; or
b) uphold the appeal and re-admit the student to the course from which the student was excluded; the Committee may, depending on the circumstances of the case, impose conditions, upon the enrolment of the applicant to the University.

18.2 Exclusions Appeals Procedure

The Exclusions Appeals Committee will investigate the issue in the following manner.

18.2.1 The Committee will meet within seven working days of the date the formal appeal is made to the Academic Registrar. It will consider all written documentation including the written statements of the student and staff member and the written statement of any witnesses.

18.2.2 The Committee may call before it the student and other parties considered appropriate by the committee.

18.2.3 Committee decisions should be reached by a majority vote.

19. Procedures for other academic issues

19.1 Where a student has an issue other than about an assessment grade or an exclusion there should be an initial contact with the relevant staff member at a level consistent to the complaint. In the case where the issue involves a member of staff, discussion should be held with the Head of School. In the case where the issue involves the Head of School, the School or Division, discussions should be held with the Pro Vice-Chancellor. Wherever possible issues should be dealt with informally.

19.2 If no resolution is reached the student shall make a written submission to the Head of School briefly outlining the case.

19.3 If the Head of School is the subject of or associated with the matter, or where the matter concerns the Department (School) itself, the student may submit a case to the Pro Vice-Chancellor of the Division.

19.4 The Head of School (or Pro Vice-Chancellor) will meet, within seven working days, with the student (or representatives of the group of students) in an attempt to clarify and resolve the issue.

19.5 With the agreement of the student, the Head of School (or Pro Vice-Chancellor) will meet informally with the appropriate member(s) of staff concerned with the issue and submit in writing to the staff member(s) concerned and the Pro Vice-Chancellor, details of the meeting and the outcome.
19.6 If the student is not satisfied with the resolution proposed under section 19.5, notice to that effect must be sent by the student to the Academic Registrar within ten working days of the date of the advice received under section 19.5.

19.7 The Academic Registrar will refer the matter to an Appeals Committee with the composition as shown in section 17.7.1.

19.8 The written report compiled by the Head of School under section 19.5 will be forwarded by the Head of School to the Chair of the Committee.

19.9 The student or a representative of the division may submit any other written material to the Committee in support of their case. Any additional evidence so provided shall be copied to the other party or parties in the appeal.

19.10 Students invited to attend a meeting of the Committee, may be represented by an advocate who may not be a member of the Appeals Committee.

19.11 The Appeals Committee shall investigate the matter in the following manner.

19.11.1 The Committee will meet within seven working days of the date the formal appeal is made to the Academic Registrar.

19.11.2 It will consider all written documentation including the written statements of the student and staff member and the written statement of any witnesses.

19.11.3 The student and a representative of the Division separately must be given the opportunity to appear during the course of the hearing.

19.11.4 The Committee may call before it the student and other parties considered appropriate by the committee.

19.11.5 Committee decisions should be reached through a majority vote.

19.12 The actions available to the Appeals Committee shall include:

a) dismissing the case;
b) upholding the case, and finding that the student has been placed at a disadvantage and instructing the School or Division concerned to take what the Committee considers to be appropriate action to rectify the matter.

20. Decisions of Appeals Committees

A written report on the decision of the Appeals Committee with reasons is to be given to the student, the staff member, the Division involved, and other committee members as appropriate within seven days of the Committee's decision.

A copy of the report will be submitted to the Vice-Chancellor for information only.

No further appeal against any decision of any Appeals Committee is possible to any officer of, or body within the University unless the student can make a case, in writing, to the Vice-Chancellor that new evidence/information is available or that there has been a breach of process.

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 is 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. Behaviours 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 classroom behaviour and interactions.
4. Resolving a grievance

Informal procedure

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 School.

4.3 Where a student has a complaint against a member of staff who is also the Head of School, or in a case where the student feels that to approach the Head of School is not appropriate, the student may take his/her complaint to the Pro Vice-Chancellor or Head of School. The Pro Vice-Chancellor or Head of School will carry out the role otherwise assigned to the Head of School, in these grievance procedures.

The Head of School will discuss the complaint with the student and advise the student where documentation describing the grievance procedure is available.

If the student's preference is for internal resolution of the complaint, the Head of School 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.

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 School to enter into a conciliation process with the respondent.

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 School may proceed with conciliating and resolving the complaint.

With the agreement of the complainant, the Head of School 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 School 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 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 School.

6. Follow-up actions

6.1 The Head of School 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.

6.2 The Head of School will ensure wherever practically possible, that work presented by the complainant will be marked independently for the period of one year, following successful resolution of the complaint.

6.3 Where the student is subjected to retaliation he/she may approach the Head of School or Pro Vice-Chancellor where appropriate and an investigation will be instituted.

6.4 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.

7. Formal procedure

7.1 If a grievance cannot be successfully conciliated by the Head of School to the satisfaction of the complainant, the complainant may instruct the Head of School to proceed with a formal complaint.

7.2 All formal complaints will be presented to the Appeals Committee.
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.

The written reports, compiled by the Head of School and signed by the complainant and the respondent will be forwarded by the Head of School to the Chair of the Appeals Committee.

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.

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.

8. Investigation of complaint

8.1 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 School. 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.

8.2 Following deliberations the Committee will make appropriate recommendations. Committee decisions will be achieved through consensus or agreement reached between all members.

8.3 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.

8.4 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.

8.5 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.

9. Appeals

9.1 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.

9.2 The finding of such an appeal shall be communicated to the appellant within fourteen days of the appeal being lodged.

10. Complaints of discrimination — external procedures

10.1 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.

10.2 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.

10.3 Where the matter is taken up with the external authority, the internal grievance procedure shall cease to apply in the case.

10.4 The appropriate external authority in the case of discrimination complaints is the Office of the Commissioner for Equal Opportunity in Victoria.
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 by publishing and distributing information as follows:

(a) The University's Handbooks will include the latest available information on approved credit transfer agreements at the time of publication.

(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 Academic Registrar prior to enrolment so that the matter can be finalised as far as possible at the time of enrolment. It is acknowledged that in these cases the application will need approval by the Division 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 recommended for national implementation in specified fields of study by the Australian Vice-Chancellors' Committee.

1.6 As far as possible the Divisions 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 Divisions 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 Divisional 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 Division's or School's credit transfer decision within the framework of the University's credit transfer policy and principles.

1.9 All Divisions 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 Divisions will determine the maximum credit to be granted for their programs. In the Higher Education Divisions. Students must undertake the final two academic semesters (equivalent to one academic year) of study at the University before taking out their awards.

Note: The University publishes a Credit Transfer Guide which includes further information on credit transfer arrangements. Copies of the Guide are available from various offices within the University.

Student Disciplinary Code
Computer and Network
Version 2.0D May 1994

Preamble

Electronic means of communication are now an intrinsic part of Swinburne University of Technology's academic infrastructure. In order to protect the integrity and thereby maximise the academic utility to the Swinburne community of the University's electronic information systems it has become necessary to develop a student disciplinary procedure.

This disciplinary code provides a mechanism for handling allegations against students of abuse in a fair and appropriate manner whilst, at the same time, providing administrators with responsible flexibility in terms of maintaining the integrity of Swinburne's electronic information systems.

Implicit in this disciplinary code is the recognition that to refuse, restrict or remove a student's access to the University's electronic information systems constitutes a serious academic penalty. As such, the disciplinary code does not assume that in every case an allegation of abuse is necessarily mischievous. With this in mind it has been designed to solve problems at the most direct level and with a view to counselling a student(s), in the first instance, on the appropriate use of Swinburne's electronic information systems.

It should be noted that whilst the preamble has been framed to broadly cover the University's electronic information systems in general, the student disciplinary code that follows is, for the present, more specific is in its scope. As such it is to be regarded as an interim and shall apply only as a breach to the University's Network Access and Code of Practice.

Application of computer and network student disciplinary code

1.1 The Computer and Network Student Disciplinary Code ('Disciplinary Code') shall be regarded as interim and until otherwise be proclaimed by the University shall apply only in respect of a breach by a student of the University's Network Access and Code of Practice Policy ('The Code of Practice')

1.2 For the purposes of section 15 of the Network Access and Code of Practice any reference to due process, whether it involves a decision to refer a breach of 'The Code of Practice' to a student disciplinary committee or otherwise, shall be deemed as a reference to the Disciplinary Code.

1.3 It is the responsibility of the University to ensure that both 'The Code of Practice' and the Disciplinary Code are widely available to students, both in hard copy and electronic form. The University shall ensure that 'The Code of Practice' and the Disciplinary Code are published in the Swinburne Handbook.

2. Counselling Procedure

2.1 If a breach of 'The Code of Practice' is detected involving a student, the matter will be referred to the Manager, Computer Services and Information Technology, or nominee, who shall, in the first instance, counsel the user(s) in a manner that ensures the user(s) is aware of the Network Access and Code of Practice, its purpose, the nature of the breach, why their actions were inappropriate and the consequences of further breaches. This counselling session shall be regarded as a warning and shall be delivered without prejudice to the access rights of the user(s).

a) The Manager, Computer Services and Information Technology shall ensure that a written record of the student counselling session is made. This record will be retained for one year from the date counselling took place, after which time the record will be destroyed.

2.2 If the user(s) persists with the action for which he/she has already been warned, or breaches 'The Code of Practice' again the Manager, Computer Services and Information Technology shall, at his/her discretion, enact the Network Disciplinary Procedure.

2.3 If the Manager, Computer Services and Information Technology, or nominee, forms the view that the breach for which the student has been referred for counselling is major, s/he may, at his/her discretion, either:

a) Proceed with the counselling procedure in accordance with section 2.1;

or

b) In addition to counselling the student, enact the Network Disciplinary Procedure. The process for initiating this procedure shall, except where otherwise stated, be in accordance with section 3.2.
i) If the Manager, Computer Services and Information Technology decides to enact the Network Disciplinary Procedure, s/he must immediately inform, with reasons, the student who it is alleged breached ‘The Code of Practice’.

ii) The Manager, Computer Services and Information Technology, may only suspend the network access rights of a student if s/he considers it necessary in order to protect the integrity of the network and also intends to enact the Network Disciplinary procedure in respect of that student. In such a case, the matter must be referred to the Student Network Discipline Panel within five working days and the student informed, with reasons, by the Manager.

iii) A nominee selected by the Manager, Computer Services and Information Technology, for the purpose of counselling a student may not enact the Network Disciplinary Procedure. This shall not apply in the event the Manager is absent and has delegated an appropriate person to act for him/her in respect for his/her responsibilities under this Disciplinary Code.

2.4 In the event a system administrator detects a major breach of ‘The Code of Practice’ which, in their judgement, threatens the integrity of the network, s/he may, if the administrator considers it necessary, immediately suspend the network access of a student suspected of the breach.

a) After suspending access, the responsible administrator shall immediately inform, with reasons, the student suspected of the breach that their access to the network has been suspended pending a review by the Manager, Computer Services and Information Technology.

b) Within two working days of the suspension, the responsible administrator shall provide a detailed report of the matter to the Manager, Computer Services and Information Technology.

c) On receiving this report the Manager, Computer Services and Information Technology shall review the decision of the responsible system administrator.

d) Following this review the Manager, Computer Services and Information Technology shall:

i) immediately restore the student's network access;

or

ii) at his/her discretion confirm the suspension and enact the Network Disciplinary Procedure within 5 working days;

or

iii) counsel the student without proceeding further, in which case the students network access shall be immediately restored. The Manager, Computer Services and Information Technology shall ensure a record of the counselling session is kept in accordance with 2.1(a).

3. Network Disciplinary Procedure

3.1 The Manager, Computer Services and Information Technology, shall not proceed with a case in respect of a student who has allegedly breached the Network Access and Code of Practice unless the student has been counselled in accordance with the Counselling Procedure.

3.2 In enacting this procedure, the Manager, Computer Services and Information Technology shall, within 10 working days of an alleged breach of ‘The Code of Practice’ and in writing, make a case with supporting evidence to the Student Network Discipline Panel which will determine the matter.

3.3 The Student Network Discipline Panel shall comprise:

- The Pro Vice-Chancellor — Information Services, who shall act as Chair
- A member of academic staff, selected by the Chair of Academic Board or Board of Technical Studies, from a teaching division other than that in which the student is taught
- The President of the Student Union, or a nominee.

The decision of the panel shall be reached by majority vote.

3.4 Upon receipt of documents from the Manager, Computer Services and Information Technology enacting the Network Disciplinary Procedure, the Chair of the Student Network Discipline Panel will notify the student, in writing, within three (3) working days. The Chair will provide the student with copies of the documents supplied to the Panel by the Manager, Computer Services and Information Technology and invite the student to respond in writing within five (5) working days.

3.5 At a date fixed by the Panel, it will convene to consider the material placed before it in relation to the allegation. The Panel may invite the Manager, Computer Services and Information Technology and the student to appear before it, as well as any other witnesses it may consider relevant to its deliberations.

a) If the Panel invites the complainant and respondent to appear before it, their appearances must be scheduled such that they attend separately and at different times.

b) If the Panel invites one party to appear it must likewise issue an invitation to the other party.

3.6 A prior warning shall not be considered by the Panel as an admission of guilt.

3.6 The actions of the panel shall be limited to:

- Dismissing the allegation;

or

- Upholding the allegation, in which case the Panel shall determine an appropriate period of suspension to network access. The Panel shall determine this question insofar as the nature and seriousness as the breach admits.
3.7 The Student Network Discipline Panel will conduct proceedings in strict accordance with the doctrine of natural justice, which entitles students to a hearing which is free from bias.

4. Appeals
4.1 A student shall have the right of appeal to the Vice-Chancellor from a decision of the Student Network Discipline Panel. This right shall extend the imposition of any penalty, as well as, the finding of the Panel.
4.2 A student shall have the right to appeal to the Vice-Chancellor if there has been a breach of process by the Student Network Disciplinary Panel.
4.3 A student shall have the right to re-argue their case and/or submit new evidence.

5. Representation
5.1 A student whom it has alleged has breached ‘The Code of Practice’ shall have the right, at any point during the operation of the Disciplinary Code, to seek the advice and/or representation from the Student Union or other advocate of their choosing.

6. Confidentiality
6.1 Confidentiality will be observed at all times throughout the exercise of this Student Disciplinary Code.

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;
Divisional Board means the sub-committee of the University's Academic Board called the 'Divisional Board' (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of School means the person appointed Head of School in a Higher Education Division and responsible for studies on 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 Divisional Board may deem equivalent for this purpose; or
4.1.2 qualified for an award judged by the Divisional Board to be of relevant character and appropriate standard; and have experience which the Divisional Board deems to be a suitable preparation for the applicants proposed field of study.

4.2 Application
No application for admission to candidature may be approved by the Divisional Board except with the support of the Head of School.

4.3 Supervision and facilities
An applicant shall be admitted to candidature only if the Divisional 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 school or other recognised unit of the University, OR
5.2 industrial, commercial, governmental, educational or research organisations approved by the Divisional 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 Divisional 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 School, the Divisional Board may grant a period of intermission of candidature on such conditions as the Divisional Board sees fit.

7. Supervision

For each candidate the Divisional Board shall appoint, on the recommendation of the Head of School, and on such terms and conditions as the Divisional 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 School in which the program is conducted.

Where two supervisors are appointed one shall be designated the Coordinating Supervisor. The Coordinating Supervisor must be a member of the staff of the University. The Coordinating 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 Divisional Board shall, on the recommendation of the Head of School, 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 Divisional Board may decide, the Divisional 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 Coordinating Supervisor). Prior to the preparation of the report the supervisor (or Coordinating 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 Divisional Board on the supervisor’s assessment of progress.

Where the Divisional 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 Divisional Board terminating candidature.

9. Thesis

9.1 Three copies of the thesis shall be submitted to the Academic 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 Divisional Board.

9.3 One copy of the thesis shall, if passed by the Divisional Board, be lodged in the Swinburne Library; one shall be held by the School in which the work was done, and one shall be returned to the candidate.

9.4 With the Divisional 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 Divisional Board shall appoint on the recommendation of the Head of School and the Coordinating Supervisor, on such terms and conditions as the Divisional 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 Divisional Board, be disclosed to the candidate. Each examiner shall provide a report to the Divisional 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 Divisional Board, be the property of Swinburne University of Technology.

12. Confidentiality

It is the Divisional 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 Divisional 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 Divisional 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 Divisional 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 Divisional Board may restrict access to the second volume for a specified period.
Where the thesis has only one volume, the Divisional Board, on receipt of a request in writing from the candidate and supported by a statement in writing from the Head of School, 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 school shall be made available only to researchers or readers specifically authorised in writing by the Divisional 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 Divisional Board, to the candidate.

14. Regulations
The Divisional 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 Divisional 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.

Statute for the degree of Master (by publication)

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;
Divisional Board means the sub-committee of the Board called the "Divisional Board" (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of School means the person appointed Head of School in a Higher Education Division and 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 Divisional 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 independent critical 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), and should provide the joint author(s) and supervisor (where applicable) with the equivalent of two years full-time study.

8. The publication submitted shall represent work undertaken in 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 qualifications.
11. In the first instance three copies of the publication shall be forwarded to the Academic 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) 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 School 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;
   Divisional Board means the Sub-committee of the University of Academic Board called the 'Divisional Board' (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
   Head of School means the person appointed Head of School in a Higher Education Division and 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 Divisional Board.

   3.4 Supervision and facilities
      An applicant shall be admitted to candidature only if the Committee is satisfied, on advice supplied by the Divisional 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 submissions 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 School, 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 Divisional 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 Coordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the University. The Coordinating 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 Divisional 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 Coordinating Supervisor). Prior to the preparation of the report the supervisor (or Coordinating 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 Academic 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 Divisional 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 Academic 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 Academic 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.

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 Committee acting on the recommendation of the Committee. In the event 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.

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.
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