Please note

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## 1990 Calendar

### January
- **1** New Year's Day
- **2** Swinburne re-opens
- **15** VCE (HSC) results
- **29** Australia Day

### February
- **5** SCT semester 1 begins
- **5** SCT apprenticeship classes begin
- **12** SCT all other classes begin
- **19** SIT enrolment period begins for Round 1 offers through VTAC
- **19** SIT teaching begins: Art (Graphic Design) and final year Engineering
- **22** SIT enrolment period begins for Round 2 offers through VTAC
- **26** SIT teaching begins: Applied Science (later years) and Engineering (except final year)

### March
- **5** SIT teaching begins: Arts and Business (all years)
- **12** Labour Day
- **31** SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure

### April
- **2** SIT and SCT last day for applications for refund of General Service Fee
- **9** SCT last day for subject variations to enrolment for Semester 1
- **11** SIT classes end for Easter break
- **19** SIT classes resume after Easter break
- **25** Anzac Day
- **30** SCT classes resume

### May
- **2** SIT Graduation ceremony
- **31** SIT last day for application for awards for students completing courses in Semester 1 1990

### June
- **11** Queen's Birthday
- **13** SCT certificate and award presentation ceremony
- **15** SIT Business semester 1 examination period begins
- **18** SIT semester 1 examination period begins
- **29** SCT semester 1 examination period ends
- **SCT semester 1 ends**

### July
- **9** SIT inter-semester break begins (except Art)
- **16** SCT semester 2 begins
- **23** SIT semester 2 begins

### August
- **31** SCT last day for subject variations to enrolments for semester 2
- **SCT last day for amendments to enrolments without penalty of failure**

### September
- **21** SIT classes end for mid-semester break
- **SCT classes end for mid-semester break**
- **27** Show Day

### October
- **1** SIT classes resume
- **1** SIT classes resume
- **8** SCT classes resume
- **17** SIT graduation ceremony

### November
- **5** SIT Business semester 2 examination period begins
- **6** Melbourne Cup Day
- **12** SCT semester 2 examination period begins: Applied Science, Arts and Engineering
- **16** SIT Business: semester 2 examination period ends
- **23** SIT examination period ends
- **26** SCT end of year examination begin (internal and external)

### December
- **3** SIT re-enrolments begin
- **7** SCT examination period ends
- **22** SCT semester 2 ends
- Swinburne closes for Christmas break

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SIT: Swinburne Institute of Technology

SCT: Swinburne College of TAFE
The information given in this Handbook is intended as a guide for persons seeking admission to Swinburne Institute of Technology or Swinburne College of TAFE and shall not be deemed to constitute a contract on the terms thereof between Swinburne Institute of Technology or Swinburne College of TAFE and a student or any third party. Both divisions reserve the right to cancel, suspend or modify in any way the matters contained in this document.

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

Equality of educational opportunity is Swinburne policy.

Swinburne Institute of Technology and Swinburne College of TAFE
John Street, Hawthorn 3122
Australia
P.O. Box 218, Hawthorn 3122
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sections

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general information

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swinburne institute of technology

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applied science

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art

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arts

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business

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engineering
Swinburne

Swinburne was established in 1908 under the name of 'Eastern Suburbs Technical College'. The first students were enrolled in 1909, when classes were begun in carpentry, plumbing and blacksmithing. The institution grew and prospered. Soon afterwards, a boys junior technical school and the first girls technical school in Victoria, were established.

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

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

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

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

To facilitate operations, teaching is carried out within two divisions, under the control of one council. They are:

Swinburne Institute of Technology — a college of advanced education offering courses for professional qualifications (diploma and degree of Bachelor) and graduate qualifications (diploma and degree of Master). Enrolments in 1989 were 3,999 full-time and 2,821 part-time students.

Swinburne College of Technical and Further Education — a technical and further education college, offering courses at middle-level or para-professional, trade, technical and Victorian Certificate of Education (Tertiary Orientation Program) levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1989 were 957 full-time and 3,082 part-time students.

Campus

The campus covers an area of approximately four hectares in the suburb of Hawthorn, approximately 7 km from the City of Melbourne. It is close to Glenferrie railway station, is well served by other means of public transport and is in close proximity to parklands.

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 century, 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 Borde and the Mullets (Stars) are what are known heraldically as 'differences', which may often serve to indicate an association with another armigerous body or family. The four Mullets in Cross symbolise the Southern Cross.

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

The motto: the College of Arms' translation of the motto is: Achievement through learning.
General Information

Swinburne Council

Membership as at 8 May 1989

Appointees of the Governor-in-Council
J.J. Eastwood, BA(Hons), DipEd(Melb) (Vice-President)
J.P. Hall, BE(Elec)(Melb), FAIM
K. Lahey, BA(Hons), MBA
M.A. Puglisi, LLB(Melb), Barrister and Solicitor (Vic) Supreme Court
L.R. Stephens, BEd(MCAE), GradDiplIndRel(PIT)
One vacancy
Nominee of the Minister for Education
M.M. Montague, PhD(Qld), BA(Hons)(Lond), GradDiplPubPol(Melb)
Members elected by the Council of Swinburne
G.J. Allen, PhD, ME(Hons), BCom, MAPsS, FACE
R.G. Chamberlain, DipMechEng, CertEng(Aero), TITC
J.M. Day, BE(Mech and Elec)(Syd), FIEAust, SME
J.M. Harrison, CBE, AM, FAIM
D.M. Reilly, MA(Mon), ALAA
J. Short
H.S. Wragge, AM, MEngSc, BEE, FTS, FIEAust, FIREE
Member ex officio
J.G. Wallace, MA(Glas), ME(Hons), PhD(Brist), FASSA (Director and Chief Executive Officer)
Member elected by Academic Board
F.X. Walsh, BA(Melb), BEd(Mon) (Vice-President)
Member elected by Board of Studies
R.G. Chamberlain, DipMechEng, CertEng(Aero), TITC
Member elected by academic staff, SIT
G.C.J. Morison, BA(Mon), DipSocStud(Melb), GradDipEd(Haw)
Member elected by academic staff, SIT
J. Learmont, BA(Hons), ME(Hons), MACE
Members elected by general staff
N.H. Nilsen
L. Scheuch-Evans, BS in Foreign Service (G'town)
Member elected by students, SIT
M.L. Quarnamba
Member elected by students, SIT
L.J. King
Council Secretariat
Secretary
F.G. Bannon, BCom(Melb), FASA, ACIS, LCA
Executive Officer
A.J. Miles, BSc(Melb), BEd(Mon)

Directorate

Director, Swinburne Institute of Technology and Swinburne College of TAFE
J.G. Wallace, MA(Glas), ME(Glas), PhD(Brist), FASSA
Associate Directors
F.G. Bannon, BCom(Melb), FASA, ACIS, LCA
B.J. MacDonald, BEc(Mon), DiplEd(Rusd)

Office of the Director

Assistant Director (Academic)
I.A. McCormick, BCom(Melb), MAdmin(Mon), FASA, CPA
Project Officers
A.R. Grigg, BA(Hons), PhD(Otago)
E. Ramsay, DiplPhysEd(Tas), BA(Hons)(Mon)
GradDipl(InfoServ)(RMIT)
Corporate Division
Director
J.G. Wallace, MA(Glas), MEd(Glas), PhD(Brist), FASSA
Associate Directors
F.G. Bannon, BCom(Melb), FASA, ACIS, LCA
B.J. McDonald, BEc(Mon), DipEd(Rusd)
Buildings, Grounds and Services
Manager
J.A. Williams, FI, HospEng, AMCIBSE
Maintenance Officer
S. Blackburn, (Acting)
Planning Officer
T. Rosauer, BArch(Melb), FRAIA
Central Technical Workshops
Manager
G. Nettleship, CEng, MIMarE
Catering Department
Manager
P. Boxshall, AFCIA
Council Secretariat
Executive Officer
A.J. Miles, ESc(Melb), BEd(Mon)
Equal Opportunity Officer
S. Reilly, PhD(Oregon), BEd, BA(Melb)
Finance Department
Manager
J. Vander Pal, DipAccy(PTC), BBus(SIT), AASA, CPA, RCA
Systems Accountant
J.F. Rayner, BSc(Melb), DipEd(Melb)
Divisional Accountant, SCT
P. Wilkins, BBus(Vict), GradDipIBS(CIT), AASA
Divisional Accountant, SIT
P. Hothin, BA(Deakin), GradDipBusAdmin(SIT), AASA, CPA
Freedom of Information Officer
S.P. Jervis, BA(Adel)
Human Resources Department
Manager
P.D. Mudd, BE(NSW), AFAIM
Safety Co-ordinator
A. Skotnicki, BAppSc(FTT), GradDipHdHyg(Deakin)
Planning and Information Systems
Manager
R.D. Sharma, BSc(Tas), DipEd(Tas), MEdAdmin(New Eng), PhD
Institutional Promotion and Development
Manager
To be appointed
Publicity and Information Unit
Head
E. Gerrand, BBus(SIT), AASA(Acting)
Swinburne Press
Manager
A.D. McNaughton
Registrar's Department
Registrar
G.L. Williamson, BSc(Adel)
Assistant Registrar (Applied Science)
M.M. Hickey, BA(Deak)
Assistant Registrar (Arts)
H.M. Ralston, BCom(Melb)
Assistant Registrar (Business)
V. Stites, BA(Melb)
Assistant Registrar (Engineering)
A.L. Dews, BBus(SIT), ARMIT
Assistant Registrar (Services)
L. Scheuch-Evans, BS in Foreign Service (G'town)
Assistant Registrar (Student Administration)
P.E. Kocar, BSc(Lat)

Security Department
Chief Security Officer
S.A. Sharwood
Student Affairs
Manager
To be appointed
Student Health and Welfare Unit
Head
R. Vines, BA(Hons)(Melb), MSc(Adeln), MAPS, AssocBPsS

Swinburne services
Library and Information Technology Services
Library
Swinburne Librarian (Acting)
P.C. Simmenauer, BA, DipLib(NSW)
Administration
E. Turner, CertAppSocSc.Lib Tech
Audiocvisual
B. Nichol, BSocSc(Lib'ship)(RMIT), BA(Melb)
M. Hawkins, CertAppSocSc.LibTech
Vacant
Periodicals
K.M. McGrath, BA(Mon), GradDipLib(RMIT), ALAA
C. Barnes, BA(UNE)
Technical services
K.M. Villwock, BA(Mon), ALAA
Acquisitions/collection management
C. Ellis, BSocSc(Lib'ship)(RMIT), ALAA
A. Davies, BA(Melb), GradDipLib(MCAE)
M. Wilksnson
C. Jenkin, BTh(MCD), MLib(Monash), GradDipLibSc(SAIT), ALAA
Cataloguing
V. Bott, BA(Hons)(Mon), DiplMLib(UNSW)
J. Saul, BA(Lib'ship)(BCAE)
J. Meggyses, CertAppSocSc.Lib Tech
Readers' services (Acting)
I.A. Douglas, BA(N'cle), MSc(Streath)
Circulation
E. Carter, BSocSc(Lib'ship)(RMIT)
Reader education
B.J. Donkin, DipArts(SIT), GradDipEd(Haw), ALAA
Reference (Acting)
J.M. Ager, BA(Melb), GradDipLib(CCAE)
Reference and reader education
B. Jones, BSocSc(Lib'ship)(RMIT), ALAA
B.A. Camfield, BA(SIT), AssocDipLib(RMIT)
G. Turnbull, BEd(Lat), GradDipLib(RMIT), GradDipTeach(Bris CAE), AssocDipFineArt(QCA), CertComm. Ill. (QCA)
S. Whelan, BA(Lat'), GradDipLib(MCAE)
A. Copeland, BSocSc(Lib'ship)(RMIT)
Vacant

The major purpose of the library is to supplement and support formal course instruction in the two teaching divisions of Swinburne and to provide ample opportunity for recreational and general reading. All books, periodicals and other materials in the collection are available for use in the library and most may be borrowed.

In 1969 the collection comprised approximately 170,000 items. In addition, 10,000 periodical titles are received, including a wide range of indexes and abstracts. There is a large collection of audiovisual material, including records, audio and videotapes, slides, films, videodiscs and computer software.
Library staff work in close association with teaching staff in developing these resources, and in helping the students by introducing them to a diversified collection of literature and a wide range of media on all types of subjects. Formal and informal instruction is given to students on the use of the catalogue, reference works and bibliographical aids. Reciprocal borrowing facilities at other tertiary educational institutions have been arranged to increase the resources available to students and staff.

Rules and procedures
Persons entitled to use the Library
The library at Swinburne is available for the use of students and staff who accept the following rules and procedures officially decided and agreed upon by the Library and Information Technology Services Committee, the Academic Board, and the Board of Studies.

Members of the general public, including past students and staff, are welcome to read or use audiovisual facilities within the library, provided that they, too, accept the rules. They may also borrow from the library on payment of a membership fee to the Swinburne Library Information Service.

The Swinburne 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 Swinburne Council.
Full-time and part-time staff members of the Institute and the College of TAFE.
Full-time and part-time students of the Institute and the College of TAFE.
Registered borrowers from other educational institutions with which Swinburne has a reciprocal borrowing agreement.
Registered members of the Swinburne Library Information Service.

Such other persons or organisations as the Swinburne Librarian may from time to time approve as borrowers.

Hours of opening
Normal hours of opening for the library during semesters are:
Monday to Thursday inclusive — 8.45am to 10.00pm
Friday — 8.45am to 8.30pm
Public holidays
Anzac Day 2.00pm to 8.30pm
Queen's Birthday 8.45am to 8.30pm
Show Day 2.00pm to 8.30pm
Cup Day 8.45am to 8.30pm
Closed on all other public holidays.
Teaching breaks
Monday to Friday 8.45am to 8.30pm
Long vacation
Monday to Friday 9.00am to 5.00pm
Closed between Christmas and New Year, with limited opening hours in January.
Saturday 12 noon to 5.00pm
From the first Saturday in March, up to and including the Saturday at the end of the first week of examinations in second semester.
Sunday 1.00pm to 5.00pm
A limited number of Sundays towards the end of each semester.

Library loans to students
Loans will only be made on presentation of a valid borrower’s card, which in the case of Swinburne students and staff is the Swinburne identity card.

General
All materials borrowed must be recorded at the loan reserve, periodical or audiovisual counters and must be returned by the date and time indicated. Items borrowed, with the exception of audiovisual and periodical material, should be returned through the chutes located outside the main entrance.

Materials on loan that are required for inclusion in the Counter Reserve collection will be recalled. Failure to respond to a recall will incur suspension of borrowing entitlement and fines.

Borrowing periods
Fortnightly loans
The normal loan period for most books and pamphlets is a fortnight, and a week for audiocassettes. Some video cassettes are now available for 2 day loan. Language tapes and Art slides may be borrowed for four weeks. This period may be extended provided the item has not been reserved and it is not overdue.

3-day loans
Available for material on the shelves which is in moderately heavy demand, and is marked ‘3-day loan’. This material may be borrowed at any time of the day, but may not be renewed.

Overnight loans
Available for: unbound periodicals, including annuals and irregular publications (but excluding display issues). A small number of items in the Counter Reserve collection are also available for overnight loan. This material may be borrowed after 4.00pm from the Counter Reserve and should be returned by 9.00am the next week-day. This condition may be varied for part-time students.

Counter Reserve collection
Material in this collection may, depending on the item, be borrowed for a period of one or two hours for use in the library, in exchange for a current Swinburne identity card, which is held until the item is returned.

See the Guide to the Library for further details.

Audiovisual materials and equipment
Many video cassettes are available for 2-day loan, together with slide sets available for classroom use only. Art slides may be borrowed for one week. Language tapes may be borrowed for four weeks. Most other material may be borrowed for one week and renewed if not reserved or overdue. A range of videodiscs and instructional personal computer software is available for use on learning stations located in the area. Both material and equipment must be booked.

Items not available
Items not available for loan outside the library include: material in the Reference collection (distinguished by the prefix ‘R’ in the call number), rare books (‘V’), archives (‘AR’), maps (‘M’), microfilms and those materials marked ‘Not for loan’ or ‘Display’.

Bound periodicals, newspapers and government publications from the deposit collection may not be borrowed.

Most video cassettes and slides (other than Art slides) are available for use on the Swinburne campus only.

Fines and penalties
Loans are issued subject to the imposition of penalties for late return as below. Fines will not increase once the item has been returned, but all penalties shall continue to apply until the fine has been paid.

Fortnightly loans and audiovisual loans — per item
$0.50 per day or part thereof overdue, to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.

3-day loans — per item
$1.25 per day of part thereof overdue to a maximum of $5.00 per item, suspension of borrowing privileges and withholding of examination results.

Periodicals — per item $1.25 per day or part thereof overdue to a maximum of $5.00 per item, suspension of borrowing privileges and withholding of examination results.
Overdues — per item
First day: $0.50 per hour late. For each day thereafter, an additional $2.00 to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.

Counter Reserve loans (within the Library Building) — per item
$0.50 per hour late, to a maximum of $5.00, suspension of borrowing privileges and withholding of examination results.

Recalls
Any items required for Counter Reserve will be recalled. Failure to return recalled items by the specified date will result in suspension of borrowing privileges and imposition of fines.

Lost library material
If an item is lost, the loss must be reported immediately to the Overdues Section, level 2. If after a reasonable search has been made, the item cannot be found, the borrower shall be responsible for the replacement cost plus a processing charge.

Identity cards
These are not transferable. Loss of an identity card must be reported immediately to the Overdues Section on level 2. If the library otherwise the library can take no responsibility for items borrowed on that card. A current card must be produced when borrowing otherwise service will be refused. Lost or damaged cards must be replaced at Student Administration at a cost of $5.00.

Rules for general conduct
Eating is not allowed in areas of the library open to the public.

Drinking, except from the drinking fountain, is not allowed in areas of the library open to the public.

Playing games in the library is not allowed.

Smoking is not permitted in areas of the library open to the public.

Bags and cases may be brought into the library, but must be offered for inspection on leaving.

A libre of quiet must be maintained in the library so that it remains a place conducive to independent study and quiet reading. Silence must be kept in the areas indicated and conversation restricted to the areas set aside for this purpose.

Any person who, in the opinion of a member of the library staff and the senior staff member on the premises, repeatedly fails to observe the above rules, or who disfigures or damages a book, periodical or any other library resource or fitting in any way, may be excluded from the library for the rest of the day, and shall be responsible for all damage caused.

Persistent or serious offenders may be reported to the Swinburne Librarian to the Swinburne Registrar for disciplinary action which may include suspension of borrowing privileges, exclusion from the library, and withholding of examination results.

Power to alter rules
One or more of the rules for general conduct may be changed from time to time by the Director, 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. Each suspension shall be reported at the earliest opportunity to the Director and to the Library and Information Technology Services Committee.

Photocopying
Photocopying machines available to staff and students are located on level 1 of the library building. These are operated by the Berkel Copytex card system: cards for $2.00 and $5.00 can be purchased from dispensers in the library. Users must abide by the relevant provisions of the Copyright Act.

Information Technology Services
Head, Information Technology Services
K. Anderson, MA(Brad), BSc(Melb), DipEE, MIEAust, MACE, TTTTC

Located in room BA309 of the Business and Arts Building. Information Technology Services is available for use by all full-time and part-time staff of both divisions.

The services offered include the locating, booking and screening of educational films; audio and video recording, including micro-teaching; 35mm slide and overhead projector transparency making; general photographic assignments; high speed audio duplicating, sound studio production and editing, and production of computer-based learning resources.

Intending users of audio and video studio recording facilities are advised to consult with the staff of Information Technology Services well in advance of the recording date.

Also available is the short-term loan of slide projectors, overhead projectors, audio and videotape recorders and other audio-visual equipment.

Student Health and Welfare Unit
Unit staff
Head, Student Health and Welfare Unit
R. Vines, BA(Hons)(Melb), MSc(Abdn), MAPeS, AssocBPeS

Administrative Officer
M. Manel, BSc(Sairl), BEd(Couns)(LaT)

Student Counselling staff
Student Counsellors
R. Vines, BA(Hons)(Melb), MSc(Abdn), MAPeS, AssocBPeS

J. Shopland, BSc(Melb), GDipEdCouns(RMIT), EdD(U Mass), MAPeS

R. MacDonald, BA(Melb), DipEdPsych(Mon), MAPeS

H. Silberg, BA(Mon), DipVocCoun(RMIT)

Receptionist
J. Ralph

Careers Information Centre staff
Careers Information Counsellor in Charge
S. Wayth, BA(Melb), GDipLibStud(WAIT), ALIAA

Schools Liaison Co-ordinator
L.E. Baron, BA(RMIT), DipEd(LaT)

Administrative Officer
J. Duffy, MA(Mon)

Graduate Placement, Student Employment and Housing staff
Graduate Employment Adviser
R. Ware, BA(LaT), GDipEd(MSC), PostGDip in Careers (VicColl)

Housing and Student Employment Officer
B. Graham, BA(Sci)(Pharm)(TCAE)

Secretory
S. Davis

Student Health Service staff
Medical Officer
S. Clarke, MB, BS(Lond)

Sisters
J. Fischer, RN, RM(Vic)(UK), RN(USA)
A. Hart, RN(Vic)

Administrative Assistant
J. Wright

Chaplaincy
Ecumenical Chaplain
H. Aveling, MA(Syd), BEd(WACAE), TSSF, STM(Wston)

Jewish Chaplain
M. Katz, BJuris(Mon)
The following services are available to all students:

- Employment - graduate
- Counselling - course and vocational
- Student health and welfare services
- Careers and course information
- Health
- Housing
- Loans
- Schools liaison program
- Chaplaincy

These services, with the exception of those of the Chaplain, are administered by the Student Health and Welfare Unit.

**Student counselling**
Location: room 206, level 2, Business and Arts Building
Telephone: 819 8025

The Student Counselling Service is available to students, staff, former students, parents and partners of students. The service is free and strictly confidential. Counsellors help in areas such as loneliness, adjustment to life at Swinburne, subject choice, deferment, choosing a course, examination anxiety, exclusion, vocational choice, studying part-time, leave of absence, academic difficulties, concern about others, study problems, marital and premarital counselling, relationships, disabilities, sexuality, family, financial problems, career planning and decisions, and student allowances. Our service offers thousands of consultations each year. No problem is considered too small.

The Student Counselling Service endeavours to develop and support procedures which will increase the general welfare of students and enhance their education at Swinburne. To this end, the service seeks representation at relevant levels throughout Swinburne. When appropriate, counsellors act as advocates for students within Swinburne, and with relevant external organisations such as the Department of Social Security and the Commonwealth Department of Education.

The Counselling Service is open from 9.00am to 5.00pm on Monday, Tuesday, Thursday and Friday and from 12.00pm to 8.00pm on Wednesday throughout the year. Times outside the advertised hours may also be arranged. The service operates on both a fixed appointment and drop-in basis.

**Careers Information Centre**
Location: room 206, level 2, Business and Arts Building
Telephone: 819 8023

The CIC is available to Swinburne students and staff, parents, prospective students and school teachers. The CIC service is free and offers a confidential Careers Information Counselling Service.

The CIC maintains an up-to-date Careers Library with information about courses from TAFE to post-graduate levels, careers, prerequisites and recommended subjects, application and selection procedures, transition to the educational campus, special entry procedures and student financial assistance schemes, in particular, AUSTUDY. Students are assisted in accessing and understanding the information through a Careers Information Counselling Service.

A Schools Liaison Program is developed within the CIC to facilitate communication between secondary schools and Swinburne, and to assist prospective students to explore the educational opportunities available at Swinburne.

The CIC is open throughout the year from 9.00am to 5.00pm Monday, Friday.

Information on employers and employment opportunities is provided by the Student Employment Office.

**Student health**
Location: laneway behind library between John and William Street
Telephone: 819 8483 & 819 8703

The service is available to all students. It is free and strictly confidential. The service is available to staff for emergency treatment only.

The service offers to all students the opportunity to seek help and answers to their problems in a confidential and non-judgemental atmosphere; and to promote a positive and confident attitude towards their health maintenance. We offer emergency treatment, general first-aid, medical consultation by appointment, nursing and medical counselling on such issues as contraception, sexually transmitted diseases, sports injuries, nutrition, immunizations, health insurance advice. Classes in cardio pulmonary resuscitation and first-aid are also offered as well as eye tests and hearing tests (audiograms) and referral information (e.g. physiotherapy, dental care and local doctors).

The service is open during teaching time, Monday to Friday: 8.45am — 5.00pm.

Doctor by appointment — 3 hours daily.

**Student housing, part-time and vacation employment**
Location: room 401b, level 4, Student Union Building (above the cafeteria)
Telephone: 819 8882

The housing service provides addresses of a wide range of accommodation, including full board, single rooms, houses, flats and hostels. Many students also use the service to find other students to share accommodation. Advice on living away from home, and the legal and financial problems associated with renting is also available to all Swinburne students.

Assistance is also provided for students seeking part-time, casual and vacation employment. This service includes advice on techniques of obtaining part-time work, and information on specific vacancies. Students are notified of available work via the part-time and vacation employment notice-board.

The office is open from 9.00am to 5.00pm Monday to Friday (later on Wednesday by appointment for the convenience of part-time students).

**Graduate placement and student employment advice**
Location: room 401a, level 4, Student Union Building (above the cafeteria)
Telephone: 819 8521

Assistance is provided for students, former students and graduates seeking full-time employment.

Several services are available including:
- an information and placement service for students seeking full-time employment, and details of major recruiting campaigns;
- an employment register for students and graduates seeking work and wishing to change their employment;
- assistance with job application and interview techniques, individually or in group workshops;
- personal guidance and support for students in their search for appropriate employment;
- a campus interview program, where a range of employers visit the campus to interview final-year diploma and degree students;
- an employment resources library, including details of employment prospects and career opportunities with private and public employers.

The office is open from 9.00am to 5.00pm Monday to Friday (later on Wednesday by appointment, for the convenience of part-time students).
Students with a disability

Students with a disability are encouraged to first advise their department. They may also wish to make contact with the Student Counselling Service. The counsellors can advise or act as advocates on specific study needs, career planning, examination arrangements, access to buildings, use of lifts, telephones and parking facilities, etc. Responding to the various needs of students is a continually developing process. It is important, therefore, that you make your particular needs known. Swinburne is a participant in the State and Federal Governments' equal opportunity program.

The Student Counselling Service is located in room 206 on level 2, Business and Arts Building. Telephone: 819 8025.

Swinburne Chaplaincy

Location: room 207, level 2, Business and Arts Building
Telephone: 819 8489

The Chaplain provides spiritual support and pastoral care to members of specific faiths, those seeking a personal framework of meaning and purpose for their own lives and to persons of no particular commitment at all. The Chaplain can provide spiritual advice and direction as well as counselling in an open manner aimed at assisting the individual to find his or her own personal solution to a particular problem or problems. He is also involved in the community life of Swinburne and takes part in student activities where appropriate. In particular, he seeks to promote a deeper awareness of the dignity and value of human life in all its aspects, and is available to celebrate weddings and christenings for members of the Swinburne community. The Chaplain works in close cooperation with the Student Health and Welfare Unit.

Students and staff are invited to drop into the Chaplaincy at any time. New students especially, are encouraged to introduce themselves early during their course.

Student loans

With approval of the Loans Fund Committee, long-term and short-term financial assistance may be obtained for full-time students from the following emergency loan funds, some of which are restricted to SFF:

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

Enquiries should be made to the Student Counselling Service. Telephone: 819 8025.

Student assistance schemes

AUSTUDY

The Commonwealth Government provides financial assistance for students aged 16 and over who are undertaking a full-time or part-time tertiary course, or undertaking full-time secondary schooling, or who are 14 years of age on 1 January 1989 and go to primary school.

Young Homeless Allowance

This scheme was introduced by the Commonwealth Government on 1 July 1986 for full-time secondary or tertiary students or people receiving a Social Security benefit.

Family Allowance Supplement

From $17-$31 per child per week for some categories of students who do not already get AUSTUDY nor a Social Security payment (other than the Family Allowance). Contact the Department of Social Security.

Pamphlets, application forms and further information are available from the Department of Social Security.

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.

Students must present their student card when applying for a concession form. Australian Airlines and Ansett airlines concessions are available from the Sports Association. Full-time students are also eligible for an international student card which is available from the Student Union Office.

Postgraduate awards

Commonwealth postgraduate awards assist people studying full-time for Master's degrees. Details are available from the Registrar.

How much is the maximum AUSTUDY living allowance?

<table>
<thead>
<tr>
<th>Age</th>
<th>Special Allowance</th>
<th>Allowance Supplement</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-17 years</td>
<td>$42.70 p.w.</td>
<td>$64.30 ($3,343)</td>
</tr>
<tr>
<td>18+ years</td>
<td>$81.40 p.w.</td>
<td>$97.70 ($5,060)</td>
</tr>
<tr>
<td>Special</td>
<td>$136.25 ($7,085) for sole parents</td>
<td></td>
</tr>
</tbody>
</table>

The maximum allowance for a dependent spouse is $42.70 p.w. ($2,226).

Some students are eligible for a fares allowance.

There is an education supplement of $30.00 p.w. ($1,560) for certain groups of pensioners and beneficiaries (normal AUSTUDY requirements must also be met).
Access Education Department
Head
J. Learmont, BA(Hons), MEd(Mon), MACE, 819 8816
Compensatory Education
Individual assistance in English and mathematics is available to students of all courses at Swinburne. The need for tuition may be related to a student's problems with a mathematics and/or English subject. Alternatively, difficulties in English or mathematics may affect a student's progress in a range of subjects of their particular course of study. Particular attention is given to the provision of English tuition to TAFE and SIT students from non-English speaking backgrounds.
Tuition may be short-term to overcome a specific difficulty or arranged on a weekly basis over a longer period of time.
Community Access Programs
Some programs 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 1:1 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 or the fire brigade.
The Centre 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.

Catering Department
Manager
P. Boxshall, AFCIA, 819 8174
The Cafeteria is located above the Ethel Swinburne Hall (shown as building no. 10 on campus map on inside back cover of this Handbook). Entrances are from the corner of John Street and Burwood Road, from level 3 of the South Engineering Building and level 3 of the new Union Building. The Cafeteria provides a range of hot food including casseroles, sandwiches, cakes, fruit, home-made soup and vegetarian lines. We also have a range of fruit juices, yoghurt and hot drinks.
The Department also operates a Coffee Shop in the SCT area (no. 30 on campus map). Hot and cold drinks and food are available.
The Staff Dining Room is located on level 3 of the South Engineering Building, Room no. SE318.

Central Technical Workshops
Manager
G. Nettleship, CEng, MIMarE, 819 8326
The technical workshop manufactures teaching aids and prepares experimental work for staff and students (in consultation with lecturers).
Equipment available includes lathes, milling machines, sheet metal, welding facilities including aluminium and stainless steel.
The instrument workshop repairs and maintains instrumentation in the electronic, mechanical, electrical, and to a minor degree, optical fields. Some manufacturing for student projects in consultation with lecturers, is also undertaken.

Child-care Centre
Co-ordinator
S. Kelly, 819 8519
A co-operative 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.

Computer Centre
Manager
M. Plunkett, BEc(Adel)
Enquiries
L. McGie
Senior Programmer
L. Schorer, BSc(Hons)(Mon)
Operations Supervisor
R. McGie
Operations Staff
Telephone: 819 8509
The Swinburne Computer Centre provides computing and data processing facilities for teaching, research and administrative applications.
In 1990 the Computer Centre will have two processors available to students who require access to Swinburne's central computing facilities. These machines will be located in the Computer Centre's main computer room.
(a) IBM 3090/120F
The largest of these systems is the IBM 3090 Model 120F. The 3090 represents a closer association with the mainstream requirements of the computing industry. This association is reflected in the curriculum of the new Bachelor of Information Technology degree and Swinburne's association with IBM which sees Swinburne staff members involved with IBM in the presentation of training programs to industry.
The 3090 is configured with 32 Mb main memory, 16 channels, 15 giga bytes of disk storage and a communication subsystem to support asynchronous and synchronous terminals, local area and wide area networks and several remote user sites. Local terminal facilities are distributed through the Applied Science, Arts, Business and Engineering faculties and the TAFE college.
Users have access to a range of programming languages (including COBOL, FORTRAN, PASCAL, RPG, APL, C, Modula 2, BASIC and Assembler) and software packages (including SPSS, SIR, SAS, IMSL, NASTRAN, CADAM and CATIA). Data base products available on the 3081(120) are CICS/DB2, and CULLINET IDMS; support for artificial intelligence applications is provided by IBM’s Expert System Environment (ESE) and the operating systems available include VM/XA and MVS/XA.
Swinburne has entered an arrangement with McCormack and Dodge which has resulted in that company's financial software being included in Swinburne's undergraduate accounting programs. Along with our arrangements with IBM (Aust) Limited this is further evidence of commitment to the provision of industry standard computing facilities for our students.

(b) UNIX

The UNIX operating system is supported at the Swinburne Computer Centre on an Encore Multimax 310. The parallel architecture of the Encore will facilitate low cost upgrades which in turn will ensure our ability to expand the configuration, at a reasonable cost, in line with the growth in demand for UNIX resources.

The Computer Centre is also responsible for the development, maintenance and production of a number of systems used by the non-teaching sector of the Institute. The major applications are Student Administration, General Ledger and the Library circulation and cataloguing systems. Basic maintenance of the Institute's terminal network is also administered by staff of the Computer Centre.

Most of a student's computing requirements can be satisfied by using a PC connected to either the UNIX or IBM systems and the different teaching departments maintain their own internal booking procedures to allow access to those terminals.

Assistance to students is provided through a duty programmer service for those problems that cannot be solved by the teaching staff. In addition, seminars are conducted specifically to ensure that teaching staff and students use the computing facilities in an efficient and co-ordinated manner. The Computer Centre produces a publication 'User News' several times throughout the academic year. Designed to assist and acquaint users in the application of Swinburne's hardware and software facilities, 'User News' is committed to all students.

Students may, on application to the Centre, be allocated an account and budget for computer facility usage. The allocation controls disc space, input, output and central processor facilities and is determined according to the requirements of the student's course.

The accounts are allocated only for the direct requirements of a student's course of study. Any student who uses the facilities for game playing or matters not associated with a course, or who interferes with other users through manipulation of passwords or files, can expect, at minimum, immediate suspension of their usage rights to Swinburne computing facilities as well as any other penalties which may be determined from time to time.

Education Unit

Head, Education Unit
B. Hawkins, BA(New Eng), MEd(Melb), MACE, 819 8384

The function of the Education Unit is to assist the teaching learning departments throughout the Institute by keeping them informed of developments in education and related disciplines through seminars, workshops and a newsletter; by working with staff who are developing and introducing new methods and courses; by channelling funds to staff who need to be relieved temporarily of teaching duties or who require special equipment or other arrangements in order to introduce new methods of technology; and by providing facilities for research into specific educational topics.

Equal Opportunity Office

Equal Opportunity Officer
S. Reilly, PhD(Oregon), BEd, BA(Melb) 819 8855, 819 8804
Location: 463 Burwood Road

Equality of educational opportunity is Swinburne policy. Council's policy on equal opportunity forbids discrimination on the grounds of sex, race, marital status, impairments, religious or political beliefs, age, sexual preference, and being a parent, childless and de facto spouse. Council is committed to providing an environment which is free from sexual harassment. Admission to courses and assessments of student performance will be conducted according to merit. Special efforts will be made to address imbalances in the distribution of male and female students in some disciplines.

Shalini Reilly may be contacted for advice and assistance.

Publicity and Information Unit

Head
E. Gerrand, BBus(SIT), CPA, AASA, 819 8847

Publicity Assistant/Journalist
A.P. Sanger, BA(m-d)(VicColl), 819 8554

Editorial Assistant
F. Heylan, BA(SIT), 819 8548

Advertising
L. Burnett, 819 8463

Conference Centre, Bookings
J. O'Neil, 819 8709

Enquiries
R. Boschen
E. O'Brien, 819 8444

The major function of the Publicity and Information Unit is to facilitate clear, effective and direct communication both within and without the Swinburne community. The fundamental goal is to publicise the Swinburne Institute of Technology and College of TAFE activities, both internally and externally. The specific functions of the Unit consist in the production of publications, liaison with media with the purpose of promoting Swinburne's public profile and quality of education and staffing the Swinburne Enquiries Office.

The Publicity and Information Unit's publications include:

- Swinburne Institute of Technology Handbook;
- Swinburne College of TAFE Handbook;
- Swinburne News (internal magazine);
- Swinburne Staff News;
- Swinburne Student Newsletter, "Update";
- Swinburne course brochures;
- Swinburne Prospectus.

The Publicity and Information Unit also manages:

- the Swinburne Conference Centre, the hiring of facilities to external parties, etc;
- advertising, all course advertisements and general corporate advertising;
- and plays a major role in the co-ordination and organisation of exhibitions (for example Open Day and Careers Expos).

Swinburne Conference Centre

The Swinburne Conference Centre is located at the northern end of the campus. It is a pleasantly situated centre, ideal for small conferences, seminars and training courses. It comprises a large seminar room, one smaller discussion room and a dining room, all available for outside hire. Enquiries about the facilities available or booking of the centre should be directed to the office staff, 819 8703.
Hire of Swinburne facilities

Outside groups wishing to use Swinburne lecture theatres and classrooms may book through the Swinburne Conference Centre.

Student parking

Enquiries
Planning, 819 8243 or 819 8760

Limited off-street car parking facilities are provided for students, part-time and full-time. No charge is made.

Conditions of use
Use of these facilities is strictly at the car 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 parking bay; and
- the driver’s observance of directions given by any of Swinburne’s Parking or Security Officers.

Parking permits
Available free of charge from Planning. Student ID card is required.

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

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

Hours of access
The main car parks are opened at 7.45am and close at 10.00pm.

Infringement of parking rules
Parking infringement on Swinburne land attracts the same fines that apply on public roads, currently $30.00. 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 Student Administration.

Motorcycles and bicycles
Convenient parking for motorcycles is available in John Street, while the Business and Arts Building and Applied Science Building car parks offer undercover racks for bicycles.

Location of car parks
On-campus parking areas are indicated on the map on the inside back cover of this Handbook. In addition, the staff car parks in Wakefield Street (except for marked reserved bays) and Paterson Street may be used by students after 5.00pm only.

Additional parking areas which can be used are located immediately behind the Hawthorn Football Ground, accessible from Linda Crescent (off Glenferrie Road). Only 7 minutes walk from Swinburne, that area offers ample parking.

Swinburne Press

Manager
D. McNaughton, 819 8123

The publications department was established in 1952 with a staff of three and one duplicating machine. Over the years this department has developed into the Swinburne Press with a staff of 12 and a full offset printing capacity.

The Press is primarily designed to give a fast print service geared to meet requirements for the production of class notes, students material and various types of administrative stationery. The major requirement is for single colour work but in addition the Press has a limited line colour production capacity.

In support of its printing element the Press operates a small bindery to collate, staple and trim publications and a computer typesetting service.

Swinburne Press is registered under the Business Names Act 1962 and is a recognised printing and publishing house.

Swinburne Student Bookshop Co-operative Limited

Manager
R. Wilkens, 819 8225

General enquiries: 819 4406

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 control of the operation remained with the members who use the Co-operative. The Co-operative's profits remain with the organisation to ensure its continued growth and viability. No external beneficiaries exist.

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

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

To become a member of the Co-op 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-op 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, and general interest books.
- Secondhand 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.
- Computers, monitors, printers etc.
- Typewriters.
- 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, that 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.

**Co-operative hours**

**Hours of opening**
Normal hours of opening for the bookshop during terms and semesters are:
- Monday to Thursday inclusive: 8:30am to 7:30pm
- Friday: 8:30am to 5:00pm

**Public holidays**
Closed

**During vacations**
Mid-semester, term and semester breaks:
- Monday to Friday: 9:00am to 5:00pm with a lunch break between 12-1:00pm

**Christmas vacation**
Closed mid-December to early February

**Services**
The bookshop offers a variety of services to students and staff and is receptive to any new ideas.

Further information, rules and regulations can be sought from the Registered Office of the Co-operative, situated in the Union Building, John Street, Hawthorn.

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**Student activities**

**Student Union — what is it?**
This is a campus-based organisation that is independently managed by students. It unites all students who are enrolled at Swinburne. It is like a trade union in its role of representing and fighting for the rights and entitlements of students.

Through the Student Representative Council, the Union allows students to have input into, and be creative with, their academic courses. Fundamentally, the Student Union strives to ensure that the time a student spends on campus is rewarding, educational, memorable and safe.

**Membership and its aims**
The Student Union is an incorporated association under the Victorian Government's Association Incorporation Act 1981. Under this Act the Student Union is a legal entity and membership to the Union is automatic on receipt of your general service fee. The purposes for which the Union is established are:

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

The 1989 Executive of the Union consisted of:

- President: Lisa King
- Vice-president: David Powell
- Activities Director: John Peat
- Education Director: Sanchia Draper
- Media Director: John Beno
- Finance Director: Renee Wahlstrom

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

The affairs of the Union fall principally into the following areas: education and welfare, resource, social activities, and media. These areas are governed by management committees, whose responsibilities are to develop and implement the policies of the Union in the areas of their activity. The management committees consist of: the relevant Executive member as Chairperson, two to three members from the Union Executive, two to four persons elected from the student body. The Executive shall convene a general meeting to receive and consider the statement submitted by the management committees.

In February or March of each year the Executive calls an Annual General Meeting of the members of the Union. 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 during the period since the preceding Budget Meeting.

All student members are eligible to stand and vote in elections and all have the same rights in respect to the Union and thus are entitled to use the services provided by it.
Orientation Week
Orientation occurs during the first week of academic classes. During orientation a diversity of entertainment is provided to encourage students to become involved and participate in the campus activities. Orientation week provides the opportunity for students to familiarize themselves with services and to establish friendships with other new and returning students. A program of activities for the week is available prior to the commencement of Orientation.

Activities Department — clubs and societies
The Activities Department of the Student Union and various clubs and societies organise numerous functions, both of a social and educational nature. The range of activities includes lunchtime concerts with bands, solo performers, Union nights, Union barbeques, comedy and contemporary performers, Union issue days, part-time evenings, film afternoons, street theatre and pageants, and not forgetting the event of the year — “The Union Ball”. The Activities Department is also responsible for co-ordinating and assisting the student based clubs and societies on campus. Those active in 1989 included:

- ACES (Association of Civil Engineering Students)
- ASPS (Association of Swinburne Psychology Students)
- Baha ‘I Faith
- BIT.PC. (Bachelor of Information Technology PClub)
- BFC. (Blood Film Club of Swinburne)
- Christian Association
- Croatian Club
- Explorers Club
- Greek Club
- Italian Club
- Korean Club
- Morantha Christian Fellowship
- MEKS (Mechanical Engineering Klub of Swinburne)
- Mental Health Club
- Photographic Society
- Students for Christ
- SAM (Swinburne Association of Marketing)
- SCABS (Swinburne Chemical and Biology Students)
- SIS (Swinburne Islamic Society)
- SOSA (Swinburne Overseas Students Association)
- Swinburne Campus Chapter of Engineers
- SWINJSS (Swinburne Jewish Students Society)
- SPACE (Swinburne Production Chemical Engineers)
- SYE (Swinburne Young Engineers)
- Vietnamese Society
- Wargaming and Role-Playing Society
- Womens Support Network

For further information on clubs and societies (e.g. how to start a club, applying for affiliation and financial support from the Union etc.) see the Activities officer.

Union van
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.

Personal Accident Insurance Scheme
All students enrolled in both Swinburne Institute and Swinburne College of TAFE who have paid their union fees are automatically covered by accident insurance. This insurance scheme covers all accidents, 24 hours a day, anywhere in the world. For further details, please contact the Administration Officer of the Union Office.

Union Office
This is situated on the 4th level of the Union Building. Various services are provided here including room bookings, Legal Advisor bookings, insurance claims, administration forms for clubs and societies, and general information. Union personnel that are located in the Union Office include the President, Manager, Education Research Officer and Assistant, and the Administration Officer. Telephone numbers: 819 2156/2656/2966/8520/8553.

Union Staff
Manager: TMB. Krishnan
Administrative Officer: Patricia Bardini
Education Co-ordinator: Tony Doss
Education Research Officer: Maree Thompson
Activities Officer: Angie Venuto
Word Processing Officer: Andrea Brislin
Contact Officer: Emma Armstrong
Media Officer: Craig Silva
Catering Officer: Henk Scholtmeyer
TAFE Officer: Nick Katiforis

Contact Information Desk
The Contact Information Desk 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 political and charity groups which you may wish to become involved with.

The Desk operates as the ticket sales point for Union activities, and sells t-shirts, windcheaters, and other Union memorabilia. The Australian Buying Advisory Service (ABAS) is available at no charge to students. This service guarantees that the price you have been quoted is in fact an unbeatable offer. So if you are considering buying a camera, television, stereo, etc., see us. Feel free to drop in anytime if you need help, direction or for any enquiries. The Contact Information Desk operates Monday to Thursday from 9:00am to 6:30pm, Friday from 9:00am to 4:00pm, and is located in the Student Services Centre (opposite Ethel Hall in John Street).

Reading Room
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 in the lounge are two photo-copiers. These copiers are cheaper than the library — only five cents per copy (A3 or A4). The Reading Room is open Monday to Thursday from 9:00am to 6:00pm and Friday 9:00am to 4:00pm. It is located in the Student Services Centre.

Tool Library
The Tool Library is located in the Student Services Centre, telephone 819 2891. As the library is a non-profit organisation, its hire rates are very reasonable. All equipment requires a deposit and student/staff ID for borrowing. Deposits can be waived for students/staff if current ID is left in lieu of deposit. Library catalogues are available from the Contact Information Desk, Tool Library and the Union Office.

Equipment available includes: lawn mowers, engine tune-up kit, arc welder, brush-cutters, electronic typewriters, auto tools, orbital sanders, percussion drills, belt sanders, barbeques, PA system, tents and rucksacks.

The Tool Library is open:
- Monday 9:00am — 5:00pm
- Tuesday 2:00pm — 6:30pm
- Wednesday 2:00pm — 5:00pm
- Thursday 2:00pm — 6:30pm
- Friday 9:00am — 5:00pm

Equipment may be borrowed and returned only during the above hours.

Union Coffee Lounge
Situated on the third level of the Union Building, this is a comfortable and popular lounge which serves tea, cappuccinos, iced coffee, fresh fruit juices, and quality snacks. Ideal for those who only want a ‘cuppa’ without queuing in the cafeteria with the noisy lunch and dinner crowds. Seats 100.

Union Cafe
The Cafe provides an extensive range of foodstuffs including hot and cold drinks, sandwiches, salads, cakes and pastries, hot take-away food and confectionery. With prices designed for student pockets, and home of the famous Budget Meal, the Union Cafe is conveniently located on the ground floor of the Union Building (next to the Bookshop).
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.

SCT Resource and Drop-in Centre
To meet the needs of TAFE students a Resource and Drop-in Centre is located on the TAFE campus. This Centre, parkour games, magazines and tea and coffee making facilities are available free of charge to students. A lounge and study area is also provided for student use.

Radio station
3SSR — Swinburne Student Radio.
Location: fourth level of the Union Building.
3SSR provides students with a variety of music and other programs which are broadcast to a number of outlets throughout the Swinburne campus. Students are involved in various activities at the station including supervisory work, 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, soundproof recording studios 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 any 3SSR activities should contact the station’s Supervisory staff in the radio station offices located on the fourth level of the Union Building.

Legal Advisor
The Student Union provides a free legal service for full and part-time students. The solicitor is available every Tuesday during the academic year between 2.15pm and 6.15pm. Bookings must be made at the Union Office.

Education, Welfare and Research Department
All matters pertaining to the quality of education and the socio-political welfare of students on campus are handled by this department. The Union employs a Co-ordinator (on a full-time basis) who oversees the activities of this department. The Co-ordinator is available for consultation on any facet of the department and can be contacted at the Union Office, 4th floor of the Union Building. There are three sections within this department.

Student Appeals and Advocacy Unit
This is designed to assist students who believe that they have been subject to any discrimination or injustice, whether in regard to their coursework assessment, teacher relationship, enrolment process, or whatever. The unit can also help prepare students, who are called to appear before the Progress Review Committee or an Exclusion Board, on the best manner in which to present their case.

Students seeking assistance can discuss their concerns, in total confidence, with the Student Advocacy and Liaison Officer, or the Union President. Both are located in the Union Office.

Education and Welfare Research Unit
This evaluates Student Services and also conducts the Course Evaluation Survey. The latter helps assess the quality of education that students are receiving in various subjects. The subjects covered depend entirely on those Course convenors who allow the Union to enter their classes and distribute the questionnaires. The information collected is processed, and the results are published in booklet form. The results are also forwarded to convenors and Heads of departments for further analysis and comment.

The Union employs an Education Research Officer to undertake this program. This person is situated in the Union Office.

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

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

Campus Clippe Shoppe
The Union Hairdresser provides an excellent service at very competitive rates. Situated adjacent to the Video Pit — 4th level of the Union Building — the Shoppe is open three days a week. To check opening times, or make bookings, ring the hairdresser direct on 819 8495; or the Union Desk on 819 8520.

Student publications
The Student Union publishes two once-weekly publications called “The Swine” and “Sibull”. “Sibull” which comes out on Tuesday provides information about on-campus student activities as well as free non-commercial advertising. “The Swine” published on Thursday, covers broader news and entertainment. Both provide a forum for students to present and discuss their views on all matters.

“Scam” is the Student magazine that provides a vehicle for students to publish creative, analytical and political articles on various subjects which won’t be found in the monopoly media. We hope it provokes discussion around social issues that are relevant to students on and off campus.

All of these publications are produced by the Student Union Media Office. Contributions by students including graphics, cartoons and articles are welcomed. If you want to learn how its done, contact the Student Union Media Director or come to the Office. The Student Union also produces a free diary and Year planner which are available from the Contact Desk and at re-enrolment.

Club printing
Clubs and societies can have their publicity material printed by the Student Union Media Office at minimal cost.

Campus Typing
Campus Typing is a quick efficient typing service available to help you complete your assignments and gain the best possible results.
We will work process your assignments, job applications, resume, letters and theses, all printed out on a high quality Apple Laser Printer.

Student Computer Centre
Desperately seeking computers
Now there is a solution, students will have access to an ergonomically designed Computer Centre, consisting of 24 brand new computers and access to popular software packages, such as Microsoft Word 4, Database III, Lotus 123, as well as your own software packages.
For further information contact Andrea at Campus Typing, 4th floor S.U. Building or telephone 819 2966 or 8553.

The winning edge can be yours
Campus Bind
Campus Bind perfectly bound documents are the hard wearing, functional, simple and cost effective way to present your valuable assignments, computer printouts, manuals and reports of all kinds.
For excellent presentation, Campus Bind will give your assignments the professional edge.
Covers are A4, white, clear plastic with cardboard backing. Available at Campus Typing, 4th floor Union Building for a mere $2.00.

General Information
Tax Return Lodgement Advisor
Prior to the period when Tax returns have to be completed for lodgement, the Union organise a Tax Accountant who has 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.

Sports Association
Executive Officer
A. Clarke, BAppSci(FIT), DipEd(Haw), 819 8018
Physical Education/Recreation Officer
D. Shanahan, BAppSci(FIT)
Administrative Assistant
R. Smith, BEd(Ball)
Swinburne Sports Association is located in the Sports Centre in John Street, central to the Institute and TAFE areas of the campus.

The Association is run by students and aims to meet the sporting and recreational pursuits of all students and staff. All currently enrolled students are members of the Association.

Sports Centre facilities include four glass backed squash courts, a well equipped weight training area, locker, shower and change facilities, multi-purpose clubs and aerobics room, fitness appraisal and meetings room. The Sports Store and Reception/Administration Office areas are also located in the Centre.

Currently, over twenty sports clubs exist at the Association, all of which are run by students. Members are encouraged to involve themselves in the clubs of their choice.

The Sports Association employs three full-time staff to oversee the day to day administration of the centre. The qualified Physical Education Officer offers members advice on weight training and health as well as conducting fitness appraisals. The Recreation Officer ensures a wide variety of recreation activities that are not offered by any of the existing sports clubs.

Clubs and recreations offered to members include: Aerobics, Athletics, Badminton, Bowling, Car, Circuit training, Cycling, Football, Golf, Hanggliding, Hockey, Horse riding, Indoor cricket, Indoor soccer, Meditation, Motorcycle, Netball, Nordic skiing, Orienteering, Sailing, SCUBA diving, Skydiving, Snow ski, Soccer, Squash, Surfing, Tai Chi, Tae Kwon Do, Tennis, Volleyball and Waterskiing.

Swinburne competes in many intercollegiate sports and recreation events throughout the year. Affiliation with Victorian and Australian college sports associations create a calendar of over twenty events that give ample opportunity for students to compete for Swinburne.

Further information on the Swinburne Sports Association’s facilities, clubs, services and recreations are available from their information Handbook, available free of charge at the Sports Centre.
Senior staff

Academic Board

Courses offered and abbreviated titles

Entrance requirements

- Undergraduate
- Postgraduate

Application procedure

- Undergraduate
- Postgraduate

Student Administration Office

Academic statements

Awards

Enrolment regulations

- Conditions
- Fees
- Confirmation
- Amendments

- Leave of absence
- Identity cards

Scholarships and awards

Assessment regulations

- Examinations
- Special examinations

Statute for the degree of Master (by research)

Statute for the degree of Master (by publication)

Statute for the degree of Doctor of Philosophy

Swinburne Centres

- Centre for Applied Colloid Science
- Centre for Applied Neurosciences
- Centre for Computer Integrated Manufacturing
- Centre for Computing Productivity Institute
- Centre for Industrial Democracy
- Centre for Marketing Strategy
- Media and Telecommunications Centre
- Centre for Psychological Services
- Science Education Centre
- Taxation Research and Advisory Centre
- Centre for Urban and Social Research
- Centre for Women's Studies

Swinburne Institute of Technology
Swinburne Institute of Technology
Director
J.G. Wallace, MA(Glas), MEd(Glas), PhD(Brist), FASSA

Faculty of Applied Science
Dean
J.G. McLean, PhD(Melb), BVSc(Syd), HDA(Hons)
Head, Department of Applied Chemistry
I.K. Jones, PhD, BAgrSc, DipEd(Melb)
Head, Department of Computer Science
D.D. Grant, PhD(Reading), MSoc(Melb), MACM, MIEEE
Head, Department of Mathematics
R. Kavanagh, MA(Dub), MSoc(Stl), MASOR, MORS
Head, Department of Physics
R.B. Silberstein, PhD(Melb), BSc(Hons)(Mon), MAIP, MIBME, MACPSM

Faculty of Art
Dean
To be appointed
Director, Computer Image Program
P.G. Brown, BA(Hons), HDFA(Lond)
Head, Department of Film & Television
J. Sabine, BA(ANU)
Head, Department of Graphic Design
D.G. Murray, BA(Graphic Design)(Stl) TTTC

Faculty of Arts
Dean
L.A. Kilmartin, BA(Qld), MA(ANU), PhD(Anl), MAPsS
P. Excell, BA(Hons)(Melb), MA(Mon)
Head, Department of Liberal Studies
M. Harney, MA(Melb), DipEd(Melb), PhD(ANU), Grad Dip Art(Com&TV)(Stl)
Head, Department of Psychology
K. Heskin, PhD(Queens)
Chair, Department of Social & Political Studies
G.G. Nichols, BA(Mon)

Faculty of Business
Dean
M.G. Frazer, BSc(Hons)(Mon), Grad Dip Ed Tert(DDIAE), MBA(Mon), PhD(Camb), AIMM, MAIP
Head, Department of Accounting
B.C. McDonald, BCom, DipEd(Melb), FASA, CPA
Head, Department of Data Processing and Quantitative Methods
D.G. Adams, BCom(Melb), MAAdmin(Mon), TSTC
Head, Department of Economics
J.B. Wielgosz, BCom(Hons), MA, DipEd(Melb)
Head, Department of Law
B.R. Clarke, LLB, BEc, LLM(Mon), Grad Dip MKT(CIT), Barrister and Solicitor (Vic) Supreme Court
Head, Department of Marketing and Organisation Behaviour
L.A.J. Zimmerman, BCom, MBA(Melb)

Faculty of Engineering
Dean
L.M. Gillin, PhD(Tasb), MEd, MEngSc, BME(Stl), ASME(Ball’t), FIEAust, FAIM, MACE, AAPI, MAIMME, MAIAA
Head, Department of Civil Engineering
R.B. Sandie, MEngSc, BCE(Melb), FIEAust, MASCE, MACE
Head, Department of Electrical and Electronic Engineering
N. Zorbas, MEngSc, MEd(Melb), BE(Hons)(WAust), MIEEE, FIEAust
Head, Department of Manufacturing Engineering
J.K. Russell, MEngSc, BE(Ind)(Melb), CEng, FIProdE, MIMechE, FIEAust
Head, Department of Mechanical Engineering
J.H. Perry, PhD(S’ton), BSc(Tech)(NSW), MIEAust

Composition of Academic Board
Members ex-officio
President of Council
Director
President, Student Union
Deans (5)
Elected Members
3 members of the academic staff of the Faculty of Applied Science elected by those staff.
3 members of the academic staff of the Faculty of Art elected by those staff.
3 members of the academic staff of the Faculty of Arts elected by those staff.
3 members of the academic staff of the Faculty of Business elected by those staff.
3 members of the academic staff of the Faculty of Engineering elected by those staff.
10 members of the academic staff of Swinburne Institute of Technology elected by and from those staff.
6 members drawn from and elected by the general staff of Swinburne Institute of Technology, the staff of the Corporate Division, the Swinburne Library, the Education Unit, the Student Health and Welfare Unit and the Computer Centre.
6 members elected by and from the enrolled students of Swinburne Institute of Technology.
2 members of Council elected by Council.
Total membership 47
Courses offered

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)**
- Computer Aided Chemistry
- Computer Aided Biochemistry
- Medical Biophysics
- Computer Science
- Environmental Health
- Instrumentation
- Mathematics
- Psychology
- Psychophysiology*

**Bachelor of Arts (BA)**
- Economics
- Film and Television
- Graphic Design
- Historical and Philosophical Studies
- Italian
- Korean
- Literature
- Media Studies
- Political Studies (can include Australian studies)
- Psychology
- Psychophysiology*
- Sociology

The courses in film and television and graphic design are offered by the Faculty of Art; the remainder by the Faculty of Arts.

**Bachelor of Business (BBus)**
- Accounting
- Computing
- Economics-Marketing
- Marketing

**Bachelor of Business/Bachelor of Arts (BBusBA)**
- Italian
- Japanese
- Korean*

**Bachelor of Engineering (BEng)**
- Civil Engineering
- Chemical Engineering
- Computer Systems Engineering
- Electrical/Electronic Engineering
- Manufacturing/Production Engineering
- Mechanical Engineering

**Bachelor of Information Technology (BIT)**

**Bachelor of Technology (BTech)**

Studies may be undertaken in various areas offered by the departments with the Faculty of Engineering. *In certain circumstances, a degree may be combined with the Bachelor of Business in Management.

**Diplomas**

Courses leading to diploma qualifications are available in the following areas:

- Diploma of Art (DipArt)
- Graphic Design
- Diploma of Building Surveying (DipBldSurv)

* Subject to accreditation.

Postgraduate Degrees

**Graduate diplomas**

The Institute offers courses leading to the following graduate diploma awards:

- Accounting
- Air-conditioning
- Applied Colloid Science
- Applied Psychology
- Biomedical Instrumentation
- Business Administration
- Business Forecasting
- Business Information Technology
- CAD/CAM
- Chemical Engineering
- Civil Engineering Construction
- Computer Science
- Computer Systems Engineering
- Corporate Finance
- Entrepreneurial Studies
- Equal Opportunity Administration
- Film and Television
- Industrial Chemistry
- Industrial Microbiology
- Italian
- Japanese
- Japanese for Professionals
- Maintenance Engineering
- Management
- Management Systems
- Manufacturing Technology
- Operations Research
- Organisation Behaviour
- Risk Management
- Scientific Instrumentation
- Social Statistics
- Telecommunication Systems Management
- Urban Research and Planning

**Graduate Certificates**

Business Administration

Not all these courses will be offered for new students in 1990.

**Degree of Master**

By coursework:

- Master of Applied Science in Applied Colloid Science MApplSc
- Master of Applied Science in Information Technology MApplSc
- Master of Arts in Counselling MA*
- Master of Business (Information Technology) MBus
- Master of Business Administration MBus*
- Master of Business (Organisation Behaviour) MBus
- Master of Engineering in Computer Integrated Manufacturing MEng
- Master of Engineering (Information Technology) MEng
- Master of Innovation MMinnv

By research and thesis, and publication: can be undertaken in those areas shown under Bachelor degrees above.

**Degree of PhD**

By research and thesis.

Enquiries should be made to the Registrar.

* Subject to accreditation.
Entrance requirements and application procedure

Undergraduate

Entrance requirements

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

1. To satisfy the general entrance requirements and to be considered for admission to the first year of a degree or diploma course a student must have satisfied one of the following:
   1.1 Completed successfully a Year 12 course of study accredited by the Victorian Curriculum and Assessment Board (VCAB), or completed a course deemed equivalent by VCAB;
   1.2 Satisfied the requirements of an approved Victorian Certificate of Education (Tertiary Orientation Program) at a Victorian technical school or TAFE college;
   1.3 Obtained, prior to 1979, grades of D or higher in at least four subjects at the Higher School Certificate examination or satisfied the requirements of Victorian adult matriculation;
   1.4 Gained a qualification deemed by the Institute to be the equivalent of any of the above.

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

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

Application procedure

Full-time

Second year and higher

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

Closing dates for full-time places in second and higher years are:
- Applied Science: 19 January 1990
- Art — Film and Television: 20 October 1989
- — Graphic Design: 10 November 1989
- Engineering: 19 January 1990

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

Part-time

Part-time courses are offered in all faculties except Art.

All applications for part-time courses must be made direct to Swinburne. Forms are obtained from the Admissions Officer, 819 8386.

Closing dates for part-time places are:
- Applied Science: 19 January 1990
- Arts: 12 January 1990
- Business: 19 January 1990
- Engineering: 19 January 1990

The special provisions for mature-age entry set out above apply for entry to first year part-time courses. Applications for part-time places should be forwarded to the Admissions Officer by the dates stipulated.

Deferred entry

Students who are offered a place in first year for 1990 may apply for a deferment until 1991. Applications must be addressed to the Registrar, and must be made at the time an offer is received.

Students who have been granted deferment will be informed in writing by the faculty concerned.

Overseas students

Overseas students who are studying in Victoria at Year 12 level and who wish to apply as full-fee students should contact the Co-ordinator of the Overseas Students Unit at Swinburne.

Postgraduate

Entrance requirements

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

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

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

Requirements for specified courses are set out in the relevant faculty sections.
Applications for admission to postgraduate courses should be received by:

Art 29 September 1989


Masters Organisation Behaviour 19 January 1990

Grad Dip. Corporate Finance 27 January 1990

Masters Info. Technology
All courses in Business 26 January 1990

Engineering 19 January 1990

Grad Dip. Accounting 19 January 1990

Urban Research and Policy 12 January 1990

Master of Business Administration* 24 December 1989


Grad Dip. Business Admin. 6 January 1990

Grad Dip. Business Administration

Computer Science 24 November 1989

Other postgraduate courses 17 January 1990

Swinburne Institute

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 examinations regulations and procedures is outlined below.

Location and office hours

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.

Academic statements

1. Students in SIT receive automatically the following records of their academic progress:

   (a) result certificates are posted to each student at the end of each semester;
      i) a list of all results
      ii) a list of all results and a statement certifying enrolment at
         Swinburne at date of certificate.
      iii) a statement certifying completion of course.
   (b) A list of all results and a statement indicating completion of course.
   (c) A list of all results plus a list of those remaining to be passed for the completion of the course.
   (d) A special letter indicating some matter requested by the student.
   (e) A statement certifying enrolment at Swinburne at date of certificate.

   *Late applications will be considered if places are available.

2. Other statements are available, on request, at the fees shown:

   (a) List of all results $5.00*
      *There is a surcharge of $5.00 if results are prior to 1971 as a manual search is then required
   (b) A list of all results and a statement indicating completion of course $10.00
   (c) A list of all results plus a list of those remaining to be passed for the completion of the course $10.00
   (d) A special letter indicating some matter requested by the student $5.00
   (e) A statement certifying enrolment at Swinburne at date of certificate No charge

Reports

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

Students nearing completion of their courses

Students nearing completion of their courses may obtain a statement indicating all results to date and those subjects required to complete their courses. Fee $10.00.
Any student who has been involved in a change of syllabus (e.g. from the 1974 syllabus to the 1974 syllabus revised 1978, or to the 1979 syllabus, etc.) and who has not previously obtained a statement, would be wise to do so before starting the final semester.

Awards

Applications for degree and diploma 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 30 September (for students completing their courses in December), of the year in which the student anticipates completion of the academic work for the award.

Enrolment regulations

Definitions

In this section:
Enrolment includes 're-enrolment'.
Enrolment form includes 're-enrolment form'.
Subject means any area of study which is part of a course leading to an award and which has a title and code number in the subject register maintained by the Student Administration section of the Registrar's Department; the singular includes the plural.
Awarding department means the department or, where courses are organised on a faculty basis (Applied Science, Arts and Business) the faculty responsible for the particular course; ‘head of awarding department’ has a similar meaning and includes the dean of the faculty where appropriate and the nominee of the head of the awarding department or dean.

Deferred entry means an intending first-year student defers enrolment for up to one year on receipt of an offer of a place. Leave of absence means the suspension of enrolment during a course for a specified period at the discretion of the appropriate faculty board on the basis that the enrolment will be resumed at the end of the period.

Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student’s course of study. Abandonment means discontinuation of enrolment without formal notification. Abandons has a similar meaning, unless the contrary intention is expressed.

Conditions of enrolment
Enrolment at Swinburne Institute of Technology is conditional upon:

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

Single subject (non-credit) enrolments
Under the conditions set out below, it is possible to study single subjects offered by the Institute without enrolling in a full degree or diploma course.

Single subjects studied in this way can not subsequently be credited towards a degree or diploma at Swinburne. The minimum fee per semester for single subject (non-credit) enrolments in 1990 will be at the rate of $70 per weekly contact hour, plus a General Service Fee of approximately $25. In some subjects the fee may be higher.

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

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

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1990 had not been determined. As a guide, the fee for 1989 was:

<table>
<thead>
<tr>
<th>Type of Student</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>$122.00</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$55.00</td>
</tr>
<tr>
<td>Students studying in the</td>
<td></td>
</tr>
<tr>
<td>cooperative mode</td>
<td>$68.00</td>
</tr>
</tbody>
</table>

For all Institute purposes a part-time student is one enrolled for subjects which require a total class, tutorial and laboratory contact time of less than 75% of the full-time course load.

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

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

Late enrolment fees
Students who do not attend for enrolment (including any required review of second semester subjects) on the date and at the time specified by their faculty or awarding department, will be required to pay a late fee of $10.00 (where re-enrolment is completed before the commencement of the following semester’s teaching); or $20.00 (where re-enrolment is completed after the commencement of teaching for the semester).

Additional fees
A part-time student who adds any subject to those for which he or she was enrolled and thereby increases the number of contact hours involved in his or her course to more than 75% of the full-time course load, will be required to pay the difference between the part-time and the full-time general service fee.

Higher Education Contribution Scheme
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 Swinburne Institute of Technology have to make a contribution to the cost of their studies. In 1989 the annual charge was $1,800.00 for a full-time student (or $900.00 for each full-time semester).

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

Students have the option of:

(i) Making a contribution ‘up front’ in a lump sum (thereby attracting a 15% discount), or
(ii) Paying the contribution on a deferred basis through the taxation system,
(iii) Making one partial payment ‘up front’ (minimum $100.00) and having the balance collected via the taxation system. Partial payments will not attract a discount. If permission is given to make more than one partial payment a handling fee may be charged.

Students have an opportunity each semester of changing their options.

Students exempt from the Scheme include:

- those who have paid fees to Swinburne for a postgraduate course in accordance with Commonwealth guidelines;
- those enrolled in a non-award course;
- those fully sponsored under a foreign aid program;
- full-fee paying overseas students;
- students otherwise subject to Overseas Student Charge arrangements;
- holders of a HECS postgraduate scholarship.

Further details about the Scheme are available from the Student Administration Office.
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 Student Administration Office, Administration Building, prior to 31 March 1990.

No later VTAC offer
A student who withdraws and does not receive a higher preference offer from VTAC may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal is lodged at the Student Administration Office, Administration Building, prior to 31 March 1990.

No refunds of fees will be made where a student withdraws after the dates set out above unless the student returns to the Student Administration with the notice of withdrawal, his or her 1989 student identity card.

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

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

To assist in the checking process, a computer-printed statement of enrolment will be posted to each student approximately four weeks after the commencement of each semester.

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

Amendments to enrolments
Withdrawing from subjects
A student may withdraw from a subject or unit without penalty of failure up to the dates shown below:
(a) for subjects concluding at the end of the first semester 31 March 1990, or
(b) for subjects concluding at the end of the second semester 31 August 1990.

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

A student who believes that the failing result NWD should not be recorded must obtain the specific approval of the dean of the faculty concerned, and the Registrar. Circumstances supporting the application must be set out on the Amendment to Enrolment form on which the approval for the withdrawal is sought. A late fee of $5.00 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 1990.

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

Notwithstanding any faculty rules, after 31 March 1990 (for subjects concluding at the end of the first semester) or 31 August 1990 (for subjects concluding at the end of the second semester) an amendment will be permitted only where special circumstances exist and the approval of the dean of the faculty concerned and the Registrar has been given. A fee of $20.00 per subject added will be charged.

Students should note that the addition of subjects may result in a charge 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 Registrar. The application should clearly indicate the circumstances on which the request is based and the length of time for which leave is sought.

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

Students who have been granted leave of absence will be eligible for a refund of their 1990 General Service Fee only if their application is received prior to 31 March 1990. Students must also attach copy of their enrolment receipt with their application.

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.

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.

Identity cards
When on campus, all enrolled students are required to carry, and to produce on request of a member of staff, the photographic indentity card issued to them. The card, which has a maximum life of four years, must be presented for update/validation for the forthcoming year on re-enrolment.

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

A student who loses an identity card should notify the library as soon as the loss is detected. Cardholders are, under library rules, responsible for any transaction made on the card up to the time of notification of the loss. A replacement card will be issued for a fee of $5.00.

No refund of the general service fee will be made unless the identity card is returned to Student Administration with the notice withdrawal from a course.
Scholarships and awards
There are a number of scholarships and awards for which
students from Swinburne Institute of Technology might be
eligible. Details of these awards are printed annually in the
first issue for August of the Victorian Education Gazette and
Teachers’ Aid. This publication may be consulted in the
library.

Assessment Regulations
Preamble
The aims of these regulations are to safeguard academic
standards, to ensure that assessment relates to the objectives
and content of the courses taught, to enable students to have
reasonable redress in cases where they may feel that an
injustice has been done, and to ensure the prompt approval
and accurate documentation of all results.
The Academic Board believes that a variety of forms of assess-
ment should be accepted for courses at Swinburne Institute
of Technology to enable faculties to select those they consider
most appropriate to each course. No attempt has been made
herein to specify appropriate procedures for the facilitation
of learning, the evaluation of course content, or determining
course objectives, methods of instruction and assessment as
these matters are the prerogative of each faculty.

1. Definitions and interpretation

Assessment categories
The range of results which may be issued for a subject.
Award
Includes the degrees of Master and Bachelor, and the
awards of Graduate Diploma, Diploma and Associate
Diploma awarded by the Swinburne Council to persons
who have completed a course of study at Swinburne
Institute of Technology.
Awarding department
The department of Swinburne Institute of Technology
which has the overall responsibility for a particular Sjin-
burne award and includes a ‘faculty’ where that respon-
sibility is taken at the faculty level.
Head of awarding department
The person responsible for the academic leadership and
administration of the awarding department, in the case
of an award being within the responsibility of a faculty
rather than department it means the dean of that faculty.
Awarding faculty board
The faculty board responsible for making recommenda-
tions to the Swinburne Council for the grant of a particu-
lar award.
Chief Examiner
The Chief Examiner is the Director of Swinburne. Res-
ponsibilities of Chief Examiner are, for the time being,
delegated to the deans of the awarding faculties.
Head of teaching department
The person designated to convene meetings of the par-
ticular subject panel established under section 4 of these
regulations.
Subject
A set of subjects the completion of which leads to the
award being within the responsibility of a faculty
rather than department it means the dean of that faculty.
Examinations Officer
The member of staff of the Registrar’s Department who
is responsible for the day-to-day administration of
examinations.
Faculty board
Includes any properly constituted sub-committee of a
faculty board authorised to approve results for a subject.
Head of teaching department
The person who holds the position of head or chair of
the department at Swinburne Institute of Technology
which is responsible for the teaching of a particular
subject.

Irregularity
An irregularity is the unauthorised use or attempted use
by or for any student of any means to gain an unfair
advantage in any examination, test, assignment, essay
or other work, the marks for which form part of the final
assessment. It includes taking actions contrary to the
instructions for such examination or work; taking into an
examination any material with the intention of using it
to obtain an advantage.

2. The objectives of assessment

These regulations shall, in any question of interpretation,
be read subject to the following objectives:
2.1 For the purpose of these regulations the main func-
tions of assessment are:
211 the facilitation of learning which includes
such matters as:
(a) helping to establish learning situations
that are appropriate to the needs, abilities and
potentialities of the individual student;
(b) enabling the diagnosis and alleviation of
specific learning difficulties;
(c) motivating and directing learning experi-
ences;
(d) developing and maintaining skills and
abilities.
One of the most effective ways of facilitating
learning is to provide the student with feedback, that is, to let the student know, as soon
as possible after they are discerned, any
specific errors, misunderstandings and short-
comings, and then to assist in overcoming
them.
3. Forms of assessment

3.1 Without limiting the generality hereof, assessment of students enrolled in a subject may be undertaken in any of the following, or any combination of the following:

3.1.1 examination at the conclusion of the duration of the subject;
3.1.2 formal or informal tests conducted at any time from the commencement of the subject to the end of the examination period designated under these regulations;
3.1.3 assignment, project work, field work, essay, report or such other activities as the subject panel shall see fit.

4. Subject panels

4.1 For each subject for which a result is required there shall be a subject panel (hereafter called the panel) comprising at least two members of the academic staff of Swinburne Institute of Technology.

4.2 The panel shall be appointed by the head of the teaching department not later than the end of the second week of the semester in which teaching of the subject commences for that particular year.

4.3 The panel shall be reported to the teaching and awarding faculty boards for noting, in the case of subjects commencing in the first semester, no later than the April meeting of the Faculty Boards and, in the case of subjects commencing in the second semester, no later than the August meeting of the Faculty Boards.

4.4 The dean of the awarding faculty or head of the awarding department, where such faculty or department is not also the teaching faculty or department, may nominate one person to be a member of a panel for courses for which he or she is responsible.

4.5 The panel shall subject to these regulations:

4.5.1 After consultation with the head of the teaching department:
4.5.1.1 determine, prior to the issue of the first test or assignment or test for the subject of the year, the form or forms of assessment to be used;
4.5.1.2 determine the assessment categories to be used for the particular year.
4.5.2 Ensure that each panel member and each person teaching the subject is familiar with the content and objectives of the subject.
4.5.3 Determine the minimum standards which a student must reach or specific work which a student must complete in order to be notified to a faculty board as a passing candidate in the subject.

4.5.4 Ensure that all students enrolled in the subject are informed of the procedures for assessment including minimum attendance requirements and allocation of marks for the subject, prior to the issue of the first assignment or test for the subject for the year.

4.5.5 Be satisfied as to assessment solutions or statements prepared by or for the convener under section 4.6 prior to the issue of the particular assignment or test.

4.5.6 Determine whether electronic calculators may be used in an examination or test and, if so, the level of sophistication of the calculators which may be used and whether or not the room supervisors shall indicate on a candidate's examination script that a calculator has been used.

4.6 The convener of the subject panel shall, subject to these regulations:

4.6.1 Ensure that the Registrar is notified, in writing, of the form of assessment to be used for the subject and semester.

4.6.2 Ensure that the Registrar is notified, at least one week prior to the commencement of the examination period for the semester, of any subject for which pass/fail pass results only are required.

4.6.3 Ensure that assessment for the subject is conducted.

4.6.4 Allocate and supervise the drafting of examination papers and assignments as required by the subject panel.

4.6.5 Ensure that all examination and test papers for the subject are error-free prior to their issue to candidates.

4.6.6 Be empowered to require written solutions to assessable materials, or a statement of minimum qualities acceptable for assessment purposes from the teaching staff responsible for writing or otherwise determining a part of the assessment.

4.6.7 Be present, or a nominee shall be present, in each examination room at the beginning of each examination in the subject to:
4.6.7.1 answer any questions which may arise regarding the subject matter of the examination;
4.6.7.2 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.

4.6.8 Ensure that examination scripts and assignments are promptly marked and the results are accurately recorded.

4.6.9 Ensure that a review of the examination script is conducted for any candidate for whom an application for special consideration has been lodged.

4.6.10 Ensure that a review of the examination script is conducted for any candidate whose initial result is a fail or on the borderline between assessment categories.

4.6.11 In the event of the subject panel being unable to reach agreement in respect of any of the matters listed under section 4.5, in consultation with the head of department, resolve the issue in question.
5. Examination

5.1 Examination for assessment is established by the recording of an approved enrolment in the appropriate subject(s) (i.e., no separate application is required to sit for an examination). No result can be given in a subject for which the student is not formally enrolled.

5.2 A student who withdraws from a subject within nine weeks of the commencement of the examination period of the semester in which the final assessment takes place shall be deemed to have failed that subject unless special permission has been given by the dean of the awarding faculty and the result shall be recorded as "Not Pass because of late withdrawal" (NWD).

No student may withdraw from a subject after the commencement of the examination period in which final assessment takes place.

5.3 The teaching faculty board may specify minimum requirements for attendance at classes, lectures, tutorials, and practical sessions in order for a student to be eligible for a passing grade in a subject.

5.4 It is the responsibility of a student to become familiar with the subject attendance requirements and methods of assessment adopted for each subject undertaken; enquiries should be directed to the convener of the appropriate subject panel.

5.5 Students requiring extra time

Subject conveners may make special arrangements for students with temporary or permanent disabilities. Applications for such arrangement (including extra writing time) should be made to the Examinations Officer. If possible, such applications should be made before the date set down for the notification of timetable changes.

6. Examination

6.1 Examination period

The Academic Board shall, on the advice of the Registrar, designate a period of time in each semester during which period any and all examinations shall be held.

6.2 Timetables

6.2.1 Approximately half-way through each semester a provisional timetable for examinations to be held during the semester’s examination period will be posted on the examinations notice-board. It is the responsibility of students to note their examination times and report immediately any clashes to the Examinations Officer.

6.2.2 The final examination timetable will be posted on the examinations notice-board approximately two weeks prior to the beginning of the examinations. It is the responsibility of students to note dates and times of examinations.

6.2.3 No information on examination timetables may be given over the telephone by a member of the Swinburne staff.

6.3 Conduct of examinations

Unless otherwise stated on the examination timetable, the following arrangements will apply:

(a) candidates for morning examinations will begin writing at 9.15am. A period of reading time prior to 9.15am may be allowed. The examination timetable will show the period of reading time.

(b) candidates for afternoon examinations will begin writing at 1.45pm. A period of reading time prior to 1.45pm may be allowed. The examination timetable will show the period of reading time.

In (a) and (b) above the examination will be deemed to have commenced at the time candidates began writing.

Except for the completion of any identification materials as may be required by the Examination Supervisor, no writing or marking of examination material shall be permitted during a period of reading time.

Electronic calculators may not be used during reading time.

Students will not be permitted to enter the examination room after 30 minutes have elapsed from the commencement of the examination, and will not be permitted to leave during the first 30 minutes nor during the last 15 minutes of the examination.

At the end of the examination students are required to remain seated until the room supervisor has collected all scripts and Institute material.

Unless expressly prohibited by the subject panel, electronic calculators may be used. Such calculators must be battery operated.

Students are required to provide their own slide rules, calculators, and drawing instruments. Students will not be permitted to borrow or lend any equipment or material during an examination.

6.4 Examination discipline

When an apparent irregularity is observed in an examination room, the student will be informed immediately by the supervisor but will be permitted to finish the examination paper. The Examinations Officer will immediately report the circumstances to the Chief Examiner, the subject convener, and the heads of the appropriate teaching and awarding departments.

At the conclusion of the examination the Chief Examiner will decide whether or not there has been an irregularity. If it is the decision of the Chief Examiner that there has been an irregularity, a meeting of the following persons will be convened:

(a) the student concerned;
(b) the subject convener;
(c) and the heads of the awarding and teaching departments;
to decide whether any penalty shall be imposed upon the student. The maximum penalty for cheating or other examination irregularity is that the student be permanently excluded from further study at the Institute and if any penalty is imposed the student shall be notified in writing.

A student shall have the right of appeal as to the finding of the Chief Examiner and/or the penalty to a committee appointed for the purpose by the Director.

The Appeals Committee shall consist of five persons, of whom:

(a) one shall be the nominee of the Chief Examiner;
(b) one shall be a student of the Institute nominated by the President of the Student Union;
(c) one shall be the convener of the subject or his nominee;
(d) two shall be nominated from the academic staff of the Institute;
provided that no member of the Appeals Committee shall have been a party to the original investigation.
7. Results

7.1 Result categories

7.1.1 The following assessment categories only may be used to record a student’s performance in a subject:

- High distinction (HD)
- Distinction (D)
- Credit (C)
- Pass (P)
- Not pass (N)

7.1.2 Where it is not appropriate for results in a subject to be issued through the full range of categories authorised by these regulations, two categories only shall be used:

- Pass (P)
- Not pass (N)

7.1.3 The following notations are applicable in special circumstances:

- Late withdrawal (NW)
- Not pass because of late withdrawal (NWD)
- No attempt (NA)

7.1.4 In courses in engineering and applied science for which block passing schemes have been approved by the Academic Board, the following results only may be used for ‘Faculty Result’ subjects:

- Pass (P) where all individual subjects have been passed;
- Faculty pass (FP) where one or more subjects have been failed but the student is permitted to proceed to the next stage without being required to repeat the subject or subjects failed;
- Not pass (N) where one or more subjects have been failed and the student is required to repeat all or some of the subjects undertaken in the stage for which the faculty result of ‘Not pass’ was obtained.

7.2 Processing results

7.2.1 The convener shall submit the following to the head of the teaching department:

7.2.1.1 The results recommended for each student enrolled for the subject;

7.2.1.2 Such statistics as are required by the head of department and faculty board:

7.2.1.3 A signed subject report in a form approved by the awarding faculty board, including:

a) certification that these regulations have been carried out;

b) statement of the assessment procedure followed;

c) copies of all examinations, tests and assignments;

d) where appropriate, copies of solutions or statements of minimum qualities; and

e) an appraisal of the subject as a whole.

7.2.2 Before recommending the results to the awarding faculty board the head of department shall ensure that a review has been carried out of the work of all candidates who are recommended as having failed a subject, or whose results are borderline to an assessment category.

7.2.3 The head of department shall recommend to the awarding faculty board results of all enrolled students for approval.

7.2.4 After faculty board has approved the results, the head of department shall arrange for the entry, by the convener, of the results on the official result sheets; for the transcription to be checked and for the official result sheets to be delivered to the Student Administration Office.

7.3 Deferred results

7.3.1 A deferred result may be granted only by the faculty board and then only when special circumstances justify the grant of an extension of time for the completion of work prescribed for the subject before a student's result in that subject is finalised.

7.3.2 When a deferred result has been granted, the result must be finalised in readiness for notification to the awarding faculty board by a date to be fixed by the board, not later than two months after the date of publication of the result. The student and the subject convener shall be advised of the date and conditions set for the finalisation of the result.

7.3.3 Any extension of the period of deferment must have the prior approval of the dean of the awarding faculty who shall fix an alternative date by which the student must have completed the requirements of the subject. Details of the extension granted and the reasons for it shall be notified to the next meeting of the faculty board.

7.3.4 As soon as the final result has been determined, the subject convener shall submit an Alteration to Result form, via the head of department, to the dean for onward transmission to the faculty board.

7.3.5 The Student Administration Office shall notify the dean of the awarding faculty of any deferred result which has not been finalised within two months of the date of publication of the deferment. The faculty board must deal with the matter at its next meeting.

7.4 Continuing notation

The notation 'continuing' may be used:

(a) in those subjects in which enrolment will normally extend for more than one year;

(b) in cases where a result is determined on submission of a report or thesis; and
Publication and withholding certification

7.5 Except by resolution of the awarding faculty board and provided in section 7.5.6, results of assessments in a subject shall be published within two weeks of the end of the examination period nearest to the conclusion of the subject. In the case of a Faculty Board resolving to publish results after the normal publication period the Academic Board shall be advised of the proposed publication date and the reasons for the later publication.

7.5.1 Except by resolution of the awarding faculty board, results of examinations and assessments in a subject shall be published within two weeks of the end of the examination period nearest to the conclusion of the subject. In the case of a Faculty Board resolving to publish results after the normal publication period, the Academic Board shall be advised of the proposed publication date and the reasons for the later publication.

7.5.2 The Student Administration Office is the only official source for the publication and certification of results.

7.5.3 A certificate of results for the particular semester will be produced and made available to every enrolled student.

7.5.4 No results will be given over the telephone.

7.5.5 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 Institute who has failed to return outstanding materials borrowed from the Swinburne Library or who has failed to pay any fine or imposition relating thereto, or who has any other outstanding commitment to the Institute, after notice to that effect had been posted by the Registrar to the student at the address most recently recorded in the Institute records for the particular student.

Reports

7.6 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 report by the examiner on any material formally assessed. Fees for such reports shall be determined from time to time by the Director.

(1) in cases where a student may be required to extend his or her enrolment in a subject for longer than the normal duration of the subject without a failing result being recorded for the earlier period of enrolment.

The notation ‘continuing’ will appear on the official examination result certificate issued to students, with a note that, in the normal course of events, re-enrolment in the next semester will be required and that no final result will be issued until the end of that semester.

7.7 Alteration to results

Any alteration to an examination result (whether finalising a deferred result or altering a published result) which is submitted within two months of publication of the original result, may be approved by the dean of the awarding faculty as chair of the faculty board. An alteration to Result form shall then be forwarded, via the Secretary to the Faculty Board, to the Student Administration Office. The Secretary shall record the details of the alteration and the reasons for it on the agenda of the next faculty board meeting. The faculty board will receive the alterations for noting. The Student Administration Office will take action on the dean’s signature.

Where an alteration to examination result, other than finalising a result for which an extension of time to complete has been granted under section 7.33, or 8.1 is submitted more than two months after publication of the original results, the alteration must be approved by the awarding faculty and forwarded to the Student Administration Office.

8. Special examinations

8.1 A special examination may be granted by the Chief Examiner:

8.1.1 Where a student is absent from the whole or part of an examination due to illness or other misadventure.

Application under this clause, accompanied by evidence of inability to attend, must be lodged at the Student Administration Office not later than midday of the third working day after the day of the examination; or

8.1.2 Where a student has obtained a pass category in all subjects except one for an undergraduate qualifications and has presented for and failed that subject in the final semester, or where a student has failed, in his/her penultimate semester, a subject which was not again available in the final semester.

(This clause must be lodged at the Student Administration Office not later than midday on the seventh working day after the day of the publication of the results of the subject in the final semester.

8.2 Special examinations granted in accordance with section 8.1 must be notified to faculty board at its first meeting after the granting of the special examinations and the student and subject convener advised.

8.3 Where a special examination has been granted the result must be finalised in readiness for notification to the awarding faculty board by a date fixed by the faculty board, but no later than two months after the date of publication of the original result.

8.4 Any extension of that period must have the prior approval of the dean of the awarding faculty who shall fix an alternative date by which the special examination must be finalised. Details of the extension granted shall be notified to the next meeting of the faculty board.

8.5 The subject convener must submit the result of the special examination to the head of department in time for it to be approved by the dean of the awarding faculty before the due date. The dean shall notify the result to the Student Administration Office and the faculty board.

8.6 The Student Administration Office shall notify the dean of the awarding faculty of any results which are outstanding for more than two months from the date of publication of the original results. The faculty board must deal with the matter at its next meeting.
9. Retention of assessed work
The head of department shall arrange for the retention of all examination scripts for a period of three calendar months after the publication of results. The head of department shall arrange for the storage of copies of a representative sample of all assessed material (including examination scripts) for all subjects taught by the department for a period of at least 24 months after the publication of results.

10. Special consideration
A student whose work during the academic year or whose performance in an examination or other assessment has been affected by illness or other serious cause may apply in writing to the Registrar for special consideration by the subject panel concerned.

An application for special consideration must be accompanied by appropriate evidence such as a medical certificate, a letter from a student counsellor, etc.

Applications should be lodged at the Student Administration Office not later than midday on the third working day after the conclusion of the day of the examination. Where no examination is held, application must be made before the end of the first week of the examination period. No application will be considered after the publication of results.

11. Appeal
Any student or group of students has the right of appeal to the head of the appropriate teaching department about any aspect of the assessment procedure in any subject. Such appeal shall be lodged within sixty days of publication of the results in that subject, unless otherwise agreed by the Chief Examiner.

Statute for the degree of Master (by research)

1. Definitions
In this statute:
Committee means the Higher Degrees Committee of the Academic Board;
Council means the Council of Swinburne Ltd;
Institute means Swinburne Institute of Technology;
Faculty Board means the sub-committee of the Institute’s Academic Board called the ‘Faculty Board’ (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of Department means the person appointed Head of Department or elected as Chair of Department responsible for studies in the particular discipline.

2. Title of degree
The degree of Master may be awarded in a field of study of any faculty of the Institute. 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 Institute (in a field relevant to the work proposed) or such other degree as the Committee may deem equivalent for this purpose; or
- 4.1.2 qualified for an award judged by the Committee to be of relevant character and appropriate standard, and have experience which the Committee deems to be a suitable preparation for the applicant’s proposed field of study.

4.2 Application
No application for admission to candidature may be approved by the Committee except with the support of the faculty board.

4.3 Supervision and facilities
An applicant shall be admitted to candidature only if the Committee is satisfied, or, advice supplied by the faculty board, that the proposed program is a suitable study in the discipline or area concerned and that adequate facilities and supervision are available.

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 by the candidate, in:
- 5.1 a department of the Institute, or
- 5.2 an industrial, commercial, governmental, educational or research organisation approved by the Committee, or
- 5.3 a combination of 5.1 and 5.2.

In addition, a candidate may be required to undertake formal studies as approved by the Committee.

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 involves less than four years full-time study (or its part-time equivalent): not less than 21 months and not, under normal circumstances, more than 36 months of full-time study;
- 6.2 for a candidate whose degree under 4.1.1 or whose award under 4.1.2 involves not less than four years’ full-time study (or its part-time equivalent): not less than 15 months and not, under normal circumstances, more than 36 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 72 months.

After taking advice from the supervisor(s) and the head of department, the Committee may grant a period of intermission of candidature on such conditions as the Committee sees fit.

7. Supervision
For each candidate the Committee shall appoint, on the recommendation of the faculty board, and on such terms and conditions as the Committee determines, one or two supervisors, one of whom shall be a member of the academic staff of the Institute.
Where two supervisors are appointed one shall be designated the Co-ordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the Institute. The Co-ordinating Supervisor shall have overall responsibility for the administrative conduct of programs.

If for any reason a supervisor is unable to supervise the candidate for a period exceeding three months, the Committee shall, on the recommendation of the faculty board, appoint a replacement supervisor.

8. Progress
At the expiry of twelve months from the date of admission to candidature and at such other times as the Committee may decide, the Committee requires a report on the progress of each candidate. The report is prepared by the supervisor (or, where there is more than one supervisor, the Co-ordinating Supervisor). Prior to the preparation of the report the supervisor (or Co-ordinating Supervisor) will be required to interview the candidate. The candidate will be given access to the report and will have the opportunity to comment to the 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 Committee. 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 Repealed.
9.4 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.
9.5 With the Committee’s prior approval a candidate may submit work other than in the form set out in 9.2 and 9.3.

10. Examination
The Committee shall appoint on the recommendation of the faculty board, on such terms and conditions as the Committee determines, at least two examiners in respect of each candidate’s thesis. The candidate’s supervisor shall not normally be appointed as an examiner. At least one examiner shall be external to the Institute.

The name 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 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 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 Limited.

12. Confidentiality
It is the Committee’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 Committee 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 Committee must receive, in writing, from the organisation, notice of such materials and the reason why, in its opinion, disclosure would be undesirable.

Where such material is involved and provided the Committee’s prior approval is obtained, the candidate may submit a thesis in two volumes, one containing the general thesis, the second containing only the restricted data or information. The Committee may restrict access to the second volume for a specified period.

Where the thesis has only one volume, the Committee, on receipt of a request in writing from the candidate and supported by statement in writing from the Head of Department, may order that, for a period of up to three years from the date of that order, the copies of the thesis forwarded to the Swinburne Library and the department shall be made available only to researchers or readers specifically authorised in writing by the Committee.

13. Copyright
Copyright in the thesis is the property of Swinburne Limited. Those rights, or any part of them, may be assigned by Council, on the advice of the Committee, to the candidate.

14. Regulations
The Committee may make or amend regulations under this statute regarding the admission to candidature, reports on candidates during the period of candidature, the examination of candidates and related matters.

15. Change in statute
This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee. In the event of an amendment being made subsequent to the beginning of a student’s candidature, that candidate may elect to continue under the statute which was in effect at the time candidature began.
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 Ltd; Faculty Board means the sub-committee of the Institute’s Academic Board called the ‘Faculty Board’ (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area; Head of Department means the person appointed Head of Department or elected Chair of Department responsible for studies in the particular discipline.

1.2 Publication Publication is a major published paper, a collection of papers or a monograph. A publication must be based on original research, investigation or developmental work carried out by the candidate in an industrial, commercial, governmental, educational or research organisation, or carried out as a member of the staff of a college of advanced education provided that the subject and nature of the research work are accepted by the Institute 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 Institute. 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 Institute 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 Institute a publication or publications.

4.2 Application
No application for admission to candidature may be approved by the Committee except with the support of the appropriate faculty board.

5. For the purpose of assessing an application, the Institute shall require that any publication submitted in respect of the application:

(a) has been the subject of critical independent examination;

(b) is available to the general public; and

(c) where it consists of several papers, relates to one aspect of the same subject.

6. A report issued by an organisation shall not, without the express consent of the organisation and the Institute, be accepted as a publication for the purpose of this statute.

7. In the event of joint publication, the applicant shall provide the Institute with a written statement indicating the extent and nature of the applicant’s personal contribution to the project. The applicant’s statement should be countersigned by the joint author(s) and supervisor (where applicable), or a written statement should be provided by the joint author(s) and supervisor (where applicable).

8. The publication submitted should represent work which is considered by the appropriate faculty board to be the equivalent of two years full-time study.

9. A candidate shall normally be required to present at least one seminar to staff and students of the Institute on the subject of publication.

10. A candidate may not submit for examination work previously submitted for any previous academic qualification.

11. In the first instance three copies of the publication shall be forwarded to the Registrar of the Institute who shall request the Committee to assess whether the candidate and the publication presented conforms to the guidelines numbered above (2-10) 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 Institute.

14. Each examiner shall be asked to give an opinion as to whether the publication demonstrated:

(a) a thorough understanding of the relevant field of study;

(b) a high level of competence;

(c) a discernable contribution in the field of study.

15. Each examiner shall assess the publication submitted as either:

(a) pass, or

(b) fail.

Publications which have been deemed to have failed may not be re-submitted.

16. If the examiners disagree, the Committee may appoint a third examiner and a majority view will determine the result; the candidate may be required to undertake an oral examination.

17. One copy of the publication, if passed by the Committee, shall be lodged in the Swinburne Library, and one shall be held by the department whose field of interest is closest to that of the candidate’s work, and one shall be returned to the candidate.

18. This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee.
Statute for the degree of Doctor of Philosophy

1. Definitions
In this statute:
Committee means the Higher Degrees Committee of the Academic Board;
Council means the Council of Swinburne Ltd;
Institute means Swinburne Institute of Technology;
Faculty Board means the Sub-Committee of the Institute of Academic Board called the 'Faculty Board' (or any authorised sub-committee thereof) which is responsible for studies being undertaken in the area;
Head of Department means the person appointed Head of Department or elected as Chairman of Department responsible for studies in the particular discipline.

2. Grading of degree
The degree of Doctor of Philosophy shall be awarded in one grade only.

3. Admission to candidature
3.1 Entry requirements
A person wishing to be admitted to candidature shall have:
3.1.1 qualified for the award of the degree of Master of the Institute (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 investigative 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 Institute may be permitted to transfer his/her candidature to the degree of Doctor of Philosophy after the completion of not less than twelve months (or its equivalent) of full-time research coursework.
3.3 Application
No application for admission to candidature may be approved by the Committee except with the support of the faculty board.
3.4 Supervision and facilities
An applicant shall be admitted to candidature only if the Committee is satisfied that the candidate fulfills the requirements set out in 3.1.1.

4. Program
4.1 The candidate shall carry out a program of research, investigation or development involving the submission of a major thesis embodying the results of that program.
The program shall be one which will make a distinct contribution to knowledge and in the execution of it the candidate shall demonstrate a substantial degree of originality.
4.2 In addition, a candidate may be required to undertake other formal studies as approved by the Committee.
4.3 The program may be carried out in:
4.3.1 a department of the Institute, 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 Institute and pay the appropriate fees and charges.

6. Intermission
After taking advice from the supervisor(s) and the Head of Department, the Committee may grant a period of intermission of candidature on such conditions as the Committee sees fit. The total period of intermissions granted during candidature shall not exceed 12 months unless the Committee deems the circumstances to be exceptional.

7. Supervision
For each candidate the Committee shall appoint, on the recommendation of the faculty board, and on such terms and conditions as the Committee determines, one or two supervisors, one of whom shall be a full-time member of the academic staff of the Institute.
If the program is carried out within the Institute, at least one supervisor shall be a member of the academic staff of the department in which the program is conducted.
Where two supervisors are appointed one shall be designated the Co-ordinating Supervisor. The Co-ordinating Supervisor must be a member of the staff of the Institute.
The Co-ordinating Supervisor shall have overall administrative responsibility for the conduct of programs.

8. Progress
At the expiry of twelve months from the date of admission to candidature and at such other times as the Committee may decide, the Committee will request a report on the progress of each candidate. The report is to be prepared by the supervisor (or, where there is more than one supervisor, the Co-ordinating Supervisor). Prior to the preparation of the report the supervisor (or Co-ordinating Supervisor) will be required to interview the candidate. The candidate will be given access to the report and will have the opportunity to comment to the Committee on the supervisor’s assessment of progress.
Where the Committee is of opinion that a candidate’s progress is not, prima facie, of a satisfactory level, a candidate may be required to show cause why candidature should not be terminated.
Failure on the part of the candidate to demonstrate satisfactory progress may result in the Committee terminating candidature.

9. Thesis
9.1 Three copies of the thesis shall be submitted to the Registrar. At least two of the copies must be bound.
9.2 The thesis must be typed 1½ spaced, in English, on A4 size paper, and conform to any other specifications prescribed by the Committee.
9.3 One copy of the thesis shall, if passed by the Committee, be lodged in the Swinburne Library, one shall be held by the department in which the work was done, and one shall be returned to the candidate.
9.4 With the Committee’s prior approval a candidate may submit work other than in the form set out in 9.2.
9.5 The thesis shall be accompanied by a certificate from the Supervisor(s) stating that in their opinion the thesis is ready for examination.
9.6 When submitting the thesis the candidate must sign a declaration that the thesis has not previously been submitted for a degree or similar award at another institution.

10. Examination
The Committee shall appoint on the recommendation of the faculty board, on such terms and conditions as the Committee determines, at least two examiners in respect of each candidate’s thesis. The candidate’s supervisor shall not normally be appointed as an examiner. At least one examiner shall be external to the Institute. The names of the examiners shall not, without the approval of the Committee, be disclosed to the candidate. Each examiner shall provide a report to the Committee on the standard of the candidate’s thesis and recommend one of the following courses of action:
(a) that the degree be awarded;
(b) that the degree be awarded subject to the inclusion in the thesis of minor specified amendments;
(c) that the degree be awarded subject to the candidate passing a written and/or oral examination in subjects related to the thesis;
(d) that the thesis be returned to the candidate for major revision and re-submission within a specified period;
(e) that an appropriate Masters degree be awarded;
(f) that the degree be not awarded.
Each examiner should indicate whether the report is to be made available to the candidate in whole or in part. In the case where an oral examination is requested by an examiner, such examination shall be held in accordance with procedures determined by the Committee.
In the case where the Committee, after considering the reports of the examiners, decides that the degree be awarded subject to the inclusion in the thesis of minor specified amendments, such amendments shall be made and submitted to the Registrar within three months of the candidate being notified of the Committee’s decision.
In the case where the Committee, after considering the reports of the examiners, decides that the thesis be returned to the candidate for major revision, the revised thesis must be submitted to the Registrar within twelve months of the candidate being notified of the Committee’s decision; the thesis may be submitted only once in its revised form and upon re-examination the examiners may recommend only that the thesis be passed or failed. Unless otherwise determined by the Committee the revised thesis shall be examined by the same examiners as performed the initial examination.

11. Patents and registered designs
The patent rights or right to register a design for any device, process, chemical or the like which has been invented or developed by a candidate in the course of the program being undertaken for the degree shall, unless otherwise determined by Council on the advice of the Committee, be the property of Swinburne Limited.

12. Confidentiality
In general the public should have access to the material contained in a thesis once the degree has been awarded. Where a program of research is carried out in or in conjunction with the type of organisation referred to in 4.3.2 above, the candidate, in order to pursue such a program, may be given access by that organisation to restricted information which the candidate or the organisation does not wish to disclose freely. In such cases the Committee must receive, in writing, from the organisation, notice of such materials and the reason why, in its opinion, disclosure would be undesirable.
Where such material is involved and provided the Committee’s prior approval is obtained, the candidate may submit a thesis in two volumes, one containing the general thesis, the second containing only the restricted data or information.
The Committee may restrict access to the second volume for a specified period. Where the thesis has only one volume, the Committee, on receipt of a request in writing from the candidate and supported by a statement in writing from the Head of Department, may order that, for a period of up to three years from the date of that order, the copies of the thesis forwarded to the Swinburne Library and the department shall be made available only to researchers or readers specifically authorised in writing by the Committee.

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Copyright in the thesis is the property of Swinburne Limited. Those rights, or any part of them, may be assigned by Council, on the advice of the Committee, to the candidate.

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15. Change in statute
This statute may be amended from time to time by Council on the advice of the Academic Board acting on the recommendation of the Committee. In the event of an amendment being made subsequent to the beginning of a student’s candidature, that candidate may elect to continue under the statute which was in effect at the time candidature began.
Swinburne Centres

Centre for Applied Colloid Science
Co-ordinator
Dr. D.E. Mainwaring, Department of Chemistry, 819 8576
The Centre was established in 1980 for the development of applied research and contract research in applied colloid science. It provides an opportunity for subscriber companies or organisations to make use of sophisticated equipment and other resources for the investigation of problems in this field. The Centre promotes the teaching of applied colloid science at both undergraduate and postgraduate levels and through short courses. It also operates as a contact point for visiting members of staff from other academic institutions, companies or government authorities, both local and overseas. Visitors frequently give lectures and discuss research activities, which proves most advantageous to students at undergraduate and 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.

Swinburne Centre for Applied Neurosciences
Director
Dr. R.B. Silberstein, Department of Physics, 819 8273
The Swinburne 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.
At this stage, the Centre is engaged in research into:
(a) brain electrical activity and schizophrenia;
(b) cortical evoked potentials and recovery from brain damage;
(c) cortical evoked activity and the objective assessment of selective attention;
(d) ageing and brain electrical activity;
(e) effects of emotional state on brain electrical activity;
(f) monitoring of awareness and anaesthetic depth using visual evoked potentials.
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 Computing Productivity Institute
Director
P. Kindler
Faculty of Business, 819 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.

Swinburne Centre for Applied Neurosciences
Director
Dr. R.B. Silberstein, Department of Physics, 819 8273
The Swinburne Centre for Applied Neurosciences was established in 1985.
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(b) cortical evoked potentials and recovery from brain damage;
(c) cortical evoked activity and the objective assessment of selective attention;
(d) ageing and brain electrical activity;
(e) effects of emotional state on brain electrical activity;
(f) monitoring of awareness and anaesthetic depth using visual evoked potentials.
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 Computer Integrated Manufacturing
Chair/Director
W. Thompson, Department of Manufacturing Engineering, 819 8491819 8372
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 institutes.
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 Industrial Democracy
Chair
John Morieson, Department of Liberal Studies, 819 8067
The Centre was established in 1982 to provide an advisory and referral service to manufacturers, government departments and unions who intend to incorporate aspects of industrial democracy and employee participation.
Consulting, the writing of occasional papers, organising workshops and seminars, preparation of videotaped and printed training materials are all part of the Centre’s work.

Centre for Marketing Strategy
Director
L. Zimmerman, Department of Marketing and Organisation, 819 8074
The establishment of the Marketing Strategy Centre has been a major initiative of the Faculty of Business. The Centre will provide a focal point between the business and government sectors and the Marketing discipline at Swinburne.
The Centre aims to help Australian business and industry in their decision-making concerning domestic as well as international business. It offers a range of consultancy, marketing research, strategic research and management development services. Through its activities the Centre will facilitate the introduction and implementation of cooperative education.
The Centre will continue to present the already well-patronised short courses in Marketing and Strategic Planning and intends to increase its portfolio of short courses in the marketing area in the near future.

Media and Telecommunications Centre
The Media and Telecommunications Centre, established in 1988, is based in the Media Studies subject area in the Faculty of Arts. Its role is to initiate educational programs that will foster closer co-operative 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 BA program, the publication of a Hawthorn community newspaper
— 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)
— a publishing program of dossiers and monographs on film, television and general media subjects.

Centre for Psychological Services
Chair
R.H. Cook, Department of Psychology, 819 8203
The Centre for Psychological Services provides several major services to students and to the wider community. These include psychotherapeutic programs, educational and training services and research consultancy, all of which are offered on a fee for service basis.

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

Initially the Centre has developed special services in:
- Marriage and relationship counselling
- Family therapy
- Infertility counselling
- Lifestyle management
- Treatment of anxiety
- Management of children and adolescents

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

Science Education Centre
Chair
J.G. McLean, Dean, Faculty of Applied Science
Co-ordinator
Nita Manning, 819 8503
The Science Education Centre operates as part of the Faculty of Applied Science to promote interest in science, technology and mathematics among school students. The major activities of the Science Education Centre are:
- Operation of the Swinburne Travelling Science Show, which is designed to stimulate interest in science and technology;
- Provision of technical information to secondary school staff;
- Giving secondary students the opportunity to participate in experimental work at Swinburne, using equipment not readily available in schools.

Taxation Research and Advisory Centre
Director
Denis Vinen, Department of Accounting, 819 8077
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 college'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

The Science Shop
Manager
Kerrie Mullins Gunst, 819 8705
The Science Shop was established in 1988 as a joint initiative of Swinburne with the Commission for the Future. It is seen as a national pilot project which will lay the foundations for other such centres throughout Australia.

The Science Shop seeks to promote public access to science, engineering and technology.

The Science Shop provides a means for individuals, community groups and small businesses to seek answers to scientific, engineering and technical questions arising from their daily lives, and for scientists and engineers to work on projects of interest and value to the community.

In addition The Science Shop publishes and disseminates information on the scientific and technical backgrounds to issues of concern to the community including the small business sector.

A range of projects and seminars are organised, designed to promote communication between scientists and the community. Science novelties, kits and publications are available for sale at The Science Shop.
Centre for Urban and Social Research

Chair
T. Burke, Department of Social and Political Studies, 819 8109

Enquiries: 819 8825, 819 8837

The Centre for Urban and Social Research was formed in 1986 by amalgamation of the Centre for Urban Studies and the Centre for Applied Behavioural Studies. The activities of the Centre range from consultancy research through short courses and seminars to community development and liaison. Members of the Centre have researched and written numerous major consultancy reports for both public and private sector clients and have considerable research and policy development skills in the areas of survey research, housing, youth studies, ethnicity, social indicators, urban data bases and demographic forecasting and analysis. The Centre has excellent support facilities including a computer assisted telephone survey system.

Centre for Women’s Studies

Chair
T. Castleman, Department of Social and Political Studies, 819 8466

The Centre for Women’s Studies was established in 1984 and is composed of members drawn from all divisions of Swinburne who have a wide range of expertise relevant to gender and the status of women.

The activities of the Centre include:

- Presenting short courses on topics which concern women and gender (e.g., feminist theory, women and literature). Such courses are open to the general public.
- Carrying out research projects which investigate aspects of the status of women and social policy relevant to the special needs of women.
- Compiling educational materials relating to women's studies for use in teaching courses on sex and gender as well as for inclusion in existing courses.
- Preparation of occasional papers.
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Assistant Registrar (Applied Science)
M.M. Hickey, BA(Dean), MAITEA

Administrative Officers
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H. Giannakis, Dip(Adel), MAITEA
L.A.K. Sincell, BA(Melb), MAITEA
M.V. Weir, BA(Mon), GradDipSecStud(CIT)

Department of Applied Chemistry

Head
I.K. Jones, PhD, BAgSc, DipEd(Melb)/FRACI

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R. Crawford, MAppSc(SIT)
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G.A.K. Hunt, BA(Melb), DipAppChem(SIT), MBSc, MACS, MACM

Senior Lecturers
Y. Leung, MSc(Heron-Wat), BSc(Hons)(Aston), BA(Open), MACS
R. Smith, PhD(Melb), BSc(Hons)(Melb), GradDipCompStud(CCAE)

Lecturers
A. Kemp, BAppSci(SIT), MACS, MACM, MIEEE
A.B. Oppenheim, BSc(Melb), MACS
P.J. Robb, MSc(Lat), BA(Melb), GradDipComp(Dean)
W.J. Crosshall, GradDipEng(SIT), BSc(Dean), MACM, MIEEE
M.J. Cross, PhD(Melb), BSc(Hons)(Melb), DipEd(Melb), BAppSci(SIT)

Computer Systems Officer
G. Collins, BAppSci(RMIT), GradDip(CAEC), BA(Dip)(RMIT), BAppSci(CAEC)

Department of Mathematics

Head
R. Kavanagh, MA(Dub), MSc(Gal), MASOR, MORS

Principal Lecturers
A.K. Easton, PhD, MSc(Trinity), DipT(ATC), FIMA
P.A. Evans, MSc, DipEd(Melb), MASOR
J.R. Iacono, MSc, BA(Mon), TPTC

Senior Lecturers
S.R. Clarke, MA(Lanc), BSc(Hons), DipEd(Melb), MASOR, MORS
N. Garnham, MSc(Kent), DipEd(Melb)
P.J. Jones, PhD(Mon), BSc(Melb), DipEd(Mon)
W.O’Dell, BA, DipEd(Melb), MASOR
B.R. Phillips, MSc(Sci)(S’ton), BSc, BEd(Melb)
S.E. Weal, MA(Lanc), BAppSci(RMIT), MASOR, MORS

Lecturers
J. Alabegovic, PhD(Yugoslavia), MSc, BSc(Yug)
C.R. Barling, MSc(Lat), DipEd(Hawi)
G.J. Francis, PhD(Mon), BSc(Hons)(Mon)
G.D. Handleby, BE, BSc(Hons), MBA(Melb)
E.P. Haufler, MSc(Oxon), DipEE, TTTC
J.C. Herzberg, PhD, BA(Melb), MAPS
N. Khan, MSc(BDA), BSc(Hons)
N. Li, PhD(Minnesota), MSc(China)
D. Lucy, PhD, BSc(Hons)(Mon), DipEd(Melb)
J. Sampson, BSc(Mon), GradDipDCIT, DipSurv(RMIT), TTTC
Department of Physics

Head
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Principal Lecturer
R.E. Hendtlass, PhD(Massey), BSc(Hons), MSc(Otago), MINZI, MAIP, FIICA

Senior Lecturers
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D.F. Murphy, PhD(Oxon), MSc(Lond), BE(Mon)
D. Ward-Smith, PhD, BSc(Hons), DipEng(Melb), MAIP, MACE
A.W. Wood, PhD(Lond), BSc(Hons)(Bristol), MSc(EAnglia), MAIP, MACPSM

Lecturers
E.N. Bakshi, PhD(Mon), MSc(Odessa), MAIP
A. Bartel, BSc(Hons)(Melb)
P.J. Cadusse, PhD, BSc(Hons)(Melb)
J. Ciorciari, BAppSci(SIT)
P.D. Ciezekowski, BAppSci(SIT)
J. Hennessy, BSc(Melb), DipMet(CBM), MAIP
T.Cert(Depl LNS)
D. Lamble, BSc(Hons)(Lond), DipEng(Melb), MAIP
A. Mazzolini, PhD, BAppSci(Melb), MAIP
R.G.D. Roberts, MSc, DipEng(Adel), Dip(PTC)
M. Schier, BAppSci(SIT), MSc(Mon)
J.M. Venema, BSc, BA(Melb), DipEE(GIT), TTTC(Haw), MAIP

Applied Science courses

Degree of Bachelor of Applied Science

The full-time degree courses are programs of cooperative education which extend over eight semesters (four years) and include two semesters of work experience. They comprise either two major studies chosen from computer-aided chemistry, computer-aided biochemistry, medical biophysics, computing, instrumentation, and mathematics or the group of subjects which constitutes the environmental health course. Students spend a total of twelve months gaining professional experience in industry, business, clinics, government or research laboratories depending on their area of study. The degree courses can also be studied on a part-time basis. Classes are offered in the evening for part-time study if student numbers are sufficient.

* Degree of Bachelor of Applied Science (Honours)

A one year full-time program is under consideration and may be available in 1990, leading to the award of Bachelor of Applied Science (Honours). It will comprise formal coursework and a major research project and will be available in all the areas offered in the undergraduate courses. Intending applicants for the honours year program should contact in the first instance the Assistant Registrar (Applied Science) on 819 8481 or the appropriate Head of Department.

* (Subject to accreditation).
Degree of Bachelor of Information Technology

This is a full-time degree course extending over three years of an average of forty-four weeks per year. It comprises computing units and supporting disciplines relating to the needs of business, selected specialist studies and periods of industry-based learning which provide a practical understanding of computing in industry.

The course is part of a National Pilot Program in Information Systems in which Swinburne awards a scholarship of $8,000 per year to each student admitted to the course.

Graduate Diploma courses

The Faculty of Applied Science offers graduate diploma courses in the following areas of study:

- Applied Colloid Science
- Biomedical Instrumentation
- Computer Science
- Industrial Chemistry
- Industrial Microbiology
- Operations Research
- Scientific Instrumentation
- Social Statistics

These courses are available for part-time (evening) study only and are designed to be completed over a two-year period.

Degree of Master of Applied Science

A part-time program is offered leading to the award of Master of Applied Science in Applied Colloid Science by coursework. The program extends over four semesters (two years). A program leading to the award of Master of Applied Science in Information Technology will be commenced in 1990. The program extends over four semesters (two years full-time, and eight semesters (four years part-time).

Individual applications for candidate for the degree of Master of Applied Science by research may be made through the Faculty of Applied Science. Intending candidates should, in the first instance, contact the Assistant Registrar (Applied Science), 819 8481.

Degree of Doctor of Philosophy

A full-time or part-time program is offered leading to the award of Doctor of Philosophy by research. Individual applications for candidate for the degree of Doctor of Philosophy in Applied Science may be made through the Faculty of Applied Science. Intending applicants should, in the first instance, contact the Assistant Registrar (Applied Science) on 819 8481.

Professional recognition

The courses leading to degrees in applied science with a double major in computer-aided applied chemistry or computer-aided biochemistry are recognised by the Royal Australian Chemical Institute.

The courses leading to a degree and including the major in computing are recognised by the Australian Computer Society as satisfying the academic requirements for membership.

The courses leading to a degree and including the major in mathematics are recognised by the Australian Society of Operations Research as satisfying the academic requirements for membership.

The course leading to a degree and including majors in medical biophysics and instrumentation is recognised by the Australian Institute of Physics and the Australian Association of Physical Scientists in Medicine as satisfying the academic requirements for membership.

The courses leading to the degree in applied science (environmental health) are recognised by the Health Department of Victoria and the Australian Institute of Health Surveyors.

Career potential

The applied science courses at Swinburne cover a wide range of career opportunities. Brief descriptions of the areas of application of the courses are as follows:

Computer-aided Chemistry

Modern chemists require a working knowledge of computers. Using their knowledge of chemical principles and their application to industrial problems such graduates take up positions with private and public companies or with government and semi-government organisations such as CSIRO. Initially graduates usually work in laboratories associated with manufacturing (industrial and agricultural chemicals, textiles, explosives, fertilizers, detergents, plastics, dyes, paints, pharmaceuticals, etc.) or in the processing of food, coal, oil, gas, minerals, etc.

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

Computer-aided Biochemistry

Biochemistry is the study of the chemistry of living matter based on principles of organic, physical and analytical chemistry. Biochemists use computers and computer controlled instrumentation to investigate and obtain data on the physical and chemical processes of the living cell. Computers are also used to control industrial processes such as fermentations.

Graduates are employed in the manufacture of drugs and pharmaceuticals; in food and nutrition industries; in production of agricultural products such as milk, butter and cheese and in the stock feed industry. They are also employed in medical clinics, hospitals, pharmaceutical and veterinary laboratories, and in medical research.

Medical Biophysics

Medical Biophysics is the study of human physiological processes together with the instrumentation used to monitor and control them.

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

Computing

The advent of electronic computers has created a whole new range of employment opportunities, and a knowledge of computers and their uses is becoming increasingly necessary for graduates in the physical and biological sciences.

Graduates will be employed in various areas depending on the combination of major studies chosen. For example, a student who had majored in computing and instrumentation could be concerned with special purpose control computers for the control of real-time processes such as power generation, steel processing or the manufacture of chemical materials. A computer-aided chemistry graduate could be interested in the simulation of complex chemical processes while a mathematics and computer science graduate would be well trained to tackle the solution of the usually intractable problems found in applied mathematics.
Instrumentation
The study of instrumentation provides students with a sound basis in measurement and instrumentation principles and their use in the development of instrumentation for the 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.
This field of study is unique to Swinburne and is an appropriate major to be combined with either medical biophysics or computing.

Mathematics
Mathematics is the foundation and language of science and technology. Increasingly it is also playing a key role in business and the social sciences such as sociology, psychology and medical research. Mathematical solutions to problems are becoming much more available with the advent of modern computers.

The main thrust of this course is Operations Research which is the application of scientific methodology to solving the problems of industry, commerce and government. OR is supported by the study of applied statistics which deals with the collection and interpretation of data, and by the study of traditional mathematics itself. A feature of the course is the pre-professional consulting experience obtained by working on real practical projects.

The mathematics major sequence provides valuable experience for potential operations researchers, management scientists, project leaders, statisticians, economic analysts, quality control scientists, systems analysts, computer scientists and teachers.

Health Surveying
This course is the only recognised training for health surveyors in Victoria.
The majority of health surveyors are employed by local government authorities and by the State Health Department, but many work with statutory authorities such as the Environment Protection Authority and the Dandenong Valley Authority. Opportunities also exist in other state and federal departments.
Health surveyors can thus be involved in varied duties such as infectious disease control and immunisation, enforcement of health standards in food shops, restaurants, hotels, etc., food quality surveillance, the control of domestic waste disposal, industrial hygiene, poisons control and pollution control.
Opportunities also exist in industry, particularly the food industry, where health surveyors assist with quality control work and in complying with health and pollution laws. The number of these opportunities is increasing.

Information Technology
The degree course in information technology commenced in 1988 as part of a three-year National Pilot Program in Information Systems. The course equips graduates to meet the shortage of professionals in the application of information technology within business, industry and with an appropriate grounding in management education. It prepares them for future roles in the management of industry and commerce. It is expected that graduates will initially obtain employment in information systems and information technology areas in industry and commerce and later move into more general management positions.

Entrance requirements
Bachelor of Applied Science courses
Standard entry to the first year of the degree course requires satisfactory completion of a Year 12 course of study in a Victorian secondary school, or its equivalent.

Computer-aided Chemistry, Computer-aided Biochemistry
Year 12
Recommended Group 1 subjects: Chemistry and a branch of Mathematics.
Vic. Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.
Swinburne College of TAFE students who satisfactorily complete the Science/Engineering VCE(TOP) are guaranteed entry to the first year.

Special Entry
There will be a special entry scheme for up to fifteen students lacking year twelve chemistry. Students entering under this scheme must have passed year twelve Biology and Mathematics. Such students will not be required to undertake SC108 Biology but will undertake a special program whereby the normal chemistry program of five hours per week in semester one is augmented by four hours per week of extra chemistry tuition. Such students would come 'on stream' at the beginning of semester two.

Medical Biophysics and Instrumentation
Year 12
Prerequisite Group 1 subjects: Physics and a branch of Mathematics. Recommended additional Group 1 subject: Chemistry. Students who have taken accredited Group 2 subjects are considered for admission.
Vic. Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.

Computing and Instrumentation
Year 12
Prerequisite Group 1 subjects: A branch of Mathematics and Physics. Students who have taken accredited Group 2 subjects are considered for admission.
Vic. Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.

Computer Science
Year 12
Prerequisite Group 1 subjects: A branch of Mathematics. For specific entrance requirements to study combinations of majors other than those above, please contact the Assistant Registrar on 819 8481.

Environmental Health
Year 12
Recommended Group 1 subjects: Mathematics A, Chemistry and Physics.
Vic. Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed subjects equivalent to the above are considered.
Swinburne College of TAFE students who have satisfactorily completed the Science/Engineering course are guaranteed entry to the first year.
Note: The course is the statutory training course for health surveyors in Victoria.
Bachelor of Information Technology
Year 12
Prerequisite Group 1 subject: a branch of Mathematics, Victorian Certificate of Education (Tertiary Orientation Program)
Students who have satisfactorily completed a course equivalent to the above are considered.
Applicants may also be required to attend an interview and/or undertake an aptitude test.

Graduate Diploma of Applied Science
For this qualification students undertake a program of study in one of the following areas:
- Computer Science
- Industrial Chemistry
- Operations Research
- Social Statistics
Entry is open to applicants with a first tertiary qualification in medicine, biological sciences, physical sciences, engineering and social science (for Social Statistics). 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.

Graduate Diploma in Applied Colloid Science
Entry 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.

Graduate Diploma in Industrial Microbiology
Entry is open to applicants with a first tertiary qualification in science or engineering. 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.

Master of Applied Science (Applied Colloid Science)
Enter is open to applicants who have completed the Graduate Diploma in Applied Colloid Science with average results at distinction level, or obtained H1 or H2A honours in an undergraduate science course with major studies in colloid science, or the equivalent of the foregoing.

Master of Applied Science (Information Technology)
Entrance requirements are specified as the Graduate Diploma in Computer Science. For progression from the Graduate Diploma in Computer Science to the third year of the Master of Applied Science course, students would normally be expected to have attained Credit in SK712 and an average of at least Credit throughout their Graduate Diploma in Computer Science studies.
Students with an honours degree in 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 co-operating institutions in Melbourne for approved equivalent course content.

Degree of Doctor of Philosophy
Entry is open to applicants who have qualified for the award of the degree of Master of the Institute (in a field relevant to the work proposed) or the equivalent of the foregoing. 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.

Special entry
Special provision is made whereby applicants may be accepted to the first year of the undergraduate courses with less than the normal entry requirements.
The scheme is not available to applicants who are less than 23 years of age or who have within the last three years failed any formal entry assessment. Selection is based on the relevance of the applicants' employment and on their educational background, particularly in the appropriate prerequisite subjects. Applicants may be required to undertake a special entry test or to attend an interview.
Applicants under the special entry scheme should include in their applications a complete record of their educational background from their final secondary year. They should also include a statement of their work experience.
Normally the number of special entry scheme admissions will not exceed 10% of any new intake in any year.

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

Diploma/degree conversion courses
Holders of recent chemistry and biochemistry diplomas who wish to study for degrees in applied science (applied chemistry and biochemistry) may apply, preferably before 1 November, for admission to the degree courses. Such applications are considered individually by the Head of the Department of Applied Chemistry in consultation with the Faculty Board.
Conversion course students are required to pass appropriate subjects from the degree course.

Application for admission
Application should be made on the appropriate form, obtained from and lodged as follows:
- Full-time first year of all undergraduate courses: Victorian Tertiary Admissions Centre
- Part-time all years of all courses (including Graduate Diplomas): Swinburne Institute of Technology
- Full-time later years of all undergraduate courses: Swinburne Institute of Technology
- Special entry — all courses: Swinburne Institute of Technology

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 of $25.00. 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 reapproval for work previously completed at Swinburne or elsewhere.
Students seeking such reapproval should consult the lecturer in charge of the subject.
Mentor scheme
Each first-year undergraduate student, whether part-time or full-time 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-enrolment
Re-enrolling students who require advice about their courses should consult their mentors. If an old syllabus is being followed, changes may be necessary either to complete the old syllabus or to effect the change to a new syllabus. Students who are in doubt about their courses should consult their mentors before attempting to re-enrol.

Assessment of student performance regulations
Student performance is assessed by various methods, e.g., formal examinations 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.
Assessment of student performance is carried out in accordance with the Assessment Regulations set out in the Swinburne Institute of Technology section of the Handbook. In addition, the Faculty of Applied Science operates, under the following regulations, a scheme of passing by years.

1. Passing by years
1.1 General

1.1.1 Eligibility
The Applied Science Faculty Board operates a scheme of passing by years. The scheme applies to students enrolled for all subjects of a standard full-time or cooperative undergraduate course of study except that students repeating any subject and students undertaking the final semester of a course are not eligible.
All other students are required to pass on a subject-by-subject basis.

1.1.2 Release of results
Results for subjects of the first year of the degree courses are released at the end of the second semester. All other subjects are released on completion of the subject. Eligible first year full-time students are assessed on the whole year’s work at the end of the second semester. All other eligible students are assessed on one semester’s work at the end of that semester. Work experience and similar subjects are not part of the scheme.

1.2 The Faculty Result

1.2.1 Categories
An eligible student enrolls for a Faculty Result and is assessed on the whole of the semester’s (or year’s) work and this assessment is issued as a Faculty Result in one of the following categories:
P: Pass: where the student passes all subjects.
FP: Faculty Pass: where the student fails one or more subjects but is considered by the Board to merit an overall pass (see clause 1.3). Such students are not required to repeat the failed subject(s).
N: Not Pass: where the student fails one or more subjects and is considered by the Board not to merit an overall pass (see clause 2). Such students are required to repeat the failed subject(s).

Faculty of Applied Science

The achievement of a Faculty Pass does not alter results in individual subjects but removes the necessity to repeat subjects not passed in the group considered.

1.3 The Faculty Pass formula

1.3.1 Assessment categories
In submitting results, the teaching department should report the assessment of student performance in each subject by an aggregate score and assessment category, as set out below:

<table>
<thead>
<tr>
<th>Assessment category</th>
<th>Aggregate score</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>&gt;85</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>60 – 64</td>
</tr>
<tr>
<td>P*</td>
<td>50 – 59</td>
</tr>
<tr>
<td>N*</td>
<td>40 – 49</td>
</tr>
<tr>
<td>N</td>
<td>&lt;40</td>
</tr>
</tbody>
</table>

1.3.2 Automatic Faculty Pass
Except as stated in clause 1.3.4 an automatic Faculty Pass will only be awarded to students whose minimum subject assessment is N* in no more than two subjects, and which satisfies the following formula:

\[ \sum_{i} n_i (x_i - 55n_i) \geq 0 \]

Where, \( n_i \) is the number of hours per week in the \( i^{th} \) subject and \( x_i \) is the aggregate score in the \( i^{th} \) subject.

1.3.3 Deliberative Faculty Pass
The Board may award a Faculty Pass to a student whose subject assessment contains not more than two N results and which satisfies the formula in clause 1.3.2, but this is done only in exceptional circumstances, and then only if the progression of the student through the course can be facilitated without adversely affecting academic standards.

1.3.4 Exceptions
Notwithstanding clause 1.3.2, a student whose academic record in the course contains a previous Faculty Pass shall not be awarded an automatic Faculty Pass.

1.4 Supplementary assessment
At the discretion of the Board a scheme of restricted supplementary assessment operates for students who have failed to satisfy the examiners in one or two subjects. In these cases consideration of a student’s Faculty Result is deferred until the results of the supplementary assessments are available.

2. Student performance

2.1 Unsatisfactory performance
A student’s performance shall be deemed to be unsatisfactory if a Faculty Result of N is published, or if not eligible for a Faculty Result, the student fails in any subject(s).
A student whose performance is unsatisfactory will be required to repeat the subject(s) failed at the first opportunity and will not be permitted to enrol in any other subject(s) unless with the specific agreement of the Courses Committee which will only act on the specific recommendation of the Head(s) of the teaching department(s).
2.2 Exclusion
If in any semester (or year in the case of first year full-time and all part-time students) a student fails all subjects or fails any subject(s) being repeated, then that student will be excluded from further study in the Faculty.

Excluded students will be permitted to appeal to the Courses Committee. The appeal may be either by a submission in writing, or by an appearance before the Committee in which case the student must give written notification of the intention to appear. At least five working days’ notice will be given of the closing date for submissions or notifications to reach the Assistant Registrar.

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

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

Cooperative education
In the Applied Science Faculty, the Bachelor of Applied Science courses are undertaken as programs of cooperative education. In these programs students learn in both academic and work settings, and these two phases of learning are related to one another in a planned manner. Swinburne, the employer and the student collaborate to provide a complete professional education.

Students benefit educationally as they are provided with practical experience in solving real problems under authentic conditions using the theoretical concepts learned in the classroom. The program aims to give an appreciation of the structure and scope of the profession, and to make students more realistic in the area of the profession in which they wish to become involved. There are also financial benefits in that students are paid a salary during the work experience semesters.

Employers of cooperative students benefit by obtaining a reliable and continuing source of personnel and by establishing direct liaison with Swinburne. Contact with cooperative students assists employers in choosing the best graduates and reducing the cost of recruiting and training new professional staff.

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

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

*Students should note that the industry-based semesters do not attract the higher education contribution scheme (HECS) charge.

Students without permanent residence status should be aware that while the Faculty will assist them in finding an industrial placement, it is frequently impossible to find local employment for students in this category. These students are advised to seek placement in their home country. The Faculty will provide information on academic institutions capable of providing supervision there.

Faculty of Applied Science
Prizes and Scholarships

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

Hancock Prize
A prize awarded to the best student completing the course leading to the award of the masters degree or the Graduate Diploma in Applied Colloid Science.

T.G.O. Jordan Memorial Prize
Reference books to the value of $100 donated by the Australian Institute of Health Surveyors (Victorian Division) are awarded by the Applied Science Faculty Board to the best student in the final year of the degree course in environmental health.

Course details
Bachelor of Applied Science

To qualify for a degree, a student must complete successfully one of the following courses:

1. double major in computer-aided chemistry;
2. computer-aided biochemistry;
3. medical biophysics combined with instrumentation;
4. computing combined with instrumentation;
5. mathematics combined with computer science;
6. double major in computer science;
7. environmental health.

The structures of courses 1 to 7 are described below. Courses combining the single major computer-aided chemistry with instrumentation, computing or mathematics are also offered on a part-time basis, subject in each case to the approval of the Faculty Board.

Since the preparation of this course material the Faculty of Applied Science has decided that overall weekly class contact hours will be reduced. Consequently some adjustments will occur from the hours listed below.

Part-time courses

These courses are also available for part-time study structured in such a way as to enable completion in six or more years. Part-time students must undertake at least eight hours of class time per week.

The availability of evening classes depends on student demand. Details of part-time programs are available from the Assistant Registrar (Applied Science) and from the heads of the teaching departments.

Part-time courses also include two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.
1. 2051 Double major in Computer-aided Chemistry

This course provides a thorough basis for a career as a professional, industrial or research chemist. It also makes the chemist proficient in modern computer technology building on essential industrial experience.

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC164</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SC108</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK180</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SM108</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP106</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP108</td>
<td>5</td>
<td>75</td>
</tr>
</tbody>
</table>

Semester 2

| SC254    | 12         | 180            |
| SC506    | 6          | 90             |
| SC514    | 4          | 60             |
| SP220    | 2          | 30             |

Semester 3

| SC370    | 6          | 90             |
| SC380    | 5          | 75             |
| SC390    | 3          | 45             |
| SC355    | 4          | 60             |
| SC360    | 3          | 45             |
| SP320    | 2          | 30             |

Semester 4

| SC470    | 5          | 75             |
| SC480    | 5          | 75             |
| SC490    | 3          | 45             |
| SC414    | 2          | 30             |
| AB411    | 1          | 15             |
| SC453    | 2          | 30             |
| SC460    | 3          | 45             |
| SP420    | 3          | 45             |

Semester 5

| SA209    | 3          | 45             |
| SA309    | 3          | 45             |

Semester 6

| SC570    | 6          | 90             |
| SC580    | 3          | 45             |
| AC111    | 1          | 15             |
| SC530    | 7          | 105            |
| SC560    | 4          | 60             |

Semester 7

| SC670    | 4          | 60             |
| SC680    | 3          | 45             |
| SC690    | 3          | 45             |
| BS619    | 4          | 60             |
| AB611    | 1          | 15             |
| SC653    | 5          | 75             |
| SC660    | 4          | 60             |

ICl is a major supporter of this course, providing funds for the purchase of molecular graphics equipment as well as being a continuing supporter of our cooperative program.

2. 2052 Computer-aided Biochemistry

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

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC154</td>
<td>5</td>
<td>75</td>
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<tr>
<td>SC108</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK180</td>
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<td>75</td>
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<tr>
<td>SM108</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP106</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP108</td>
<td>5</td>
<td>75</td>
</tr>
</tbody>
</table>

Semester 2

| SC254    | 12         | 180            |
| SC208    | 6          | 90             |
| SM214    | 4          | 60             |
| SP520    | 2          | 30             |

Semester 3

| SC370    | 6          | 90             |
| SC380    | 5          | 75             |
| SC390    | 3          | 45             |
| SC362    | 2          | 30             |
| SC319    | 4          | 60             |
| SC365    | 4          | 60             |

Semester 4

| SC470    | 5          | 75             |
| SC460    | 5          | 75             |
| SC490    | 3          | 45             |
| SC414    | 2          | 30             |
| AB411    | 1          | 15             |
| SC462    | 2          | 30             |
| SC418    | 3          | 45             |
| SC465    | 3          | 45             |

Semester 5

| SA209    | 3          | 45             |
| SA309    | 3          | 45             |

Semester 6

| SC570    | 6          | 90             |
| SC580    | 3          | 45             |
| AC111    | 1          | 15             |
| SC530    | 7          | 105            |
| SC560    | 4          | 60             |

Semester 7

| SC670    | 4          | 60             |
| SC680    | 3          | 45             |
| SC690    | 3          | 45             |
| BS619    | 4          | 60             |
| AB611    | 1          | 15             |
| SC653    | 5          | 75             |
| SC660    | 4          | 60             |

ICl is a major supporter of this course, providing funds for the purchase of molecular graphics equipment as well as continuing support for the cooperative program.
3. 2054 Medical Biophysics and Instrumentation

This combination is unique to Swinburne and is designed to produce research and development staff for hospitals and industry. The course offers the student a firm grounding in instrumentation and life sciences. Medical biophysics has a strong orientation and consists of two parallel streams, human instrumentation and life sciences. The course offers the student a firm grounding in industrial. The course offers the student a firm grounding in instrumentation and life sciences. Medical biophysics has a strong orientation and consists of two parallel streams, human instrumentation and life sciences.

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC154 Chemistry</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SC106 Biology</td>
<td>4</td>
<td>60</td>
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<tr>
<td>SK106 Computer Science</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SM108 Mathematical Methods</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP106 Physics or,</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP107 Physics</td>
<td>5</td>
<td>75</td>
</tr>
</tbody>
</table>

Semester 2

| SC255 Chemistry | 4 | 60 |
| SM215 Mathematical Methods | 4 | 60 |
| SP210 Introduction to Instrumentation | 4 | 60 |
| SP209 Physics 2 | 6 | 90 |
| AB215 Complementary Studies | 2 | 30 |
| SP224 Introductory Biophysics | 4 | 60 |

Semester 3

| SP308 Physics 3 | 4 | 60 |
| SM315 Mathematical Methods | 4 | 60 |
| SP310 Analogue and Optical Techniques | 4 | 60 |
| SP330 Digital Fundamentals | 4 | 60 |
| SP304 Biophysical Systems A | 4 | 60 |
| SP325 Biophysical Systems B | 4 | 60 |

Semester 4

| SM415 Mathematical Methods | 2 | 30 |
| SP410 Experimental Techniques | 2 | 30 |
| SP409 Physics 4 | 4 | 60 |
| SP410 Analogue Devices and Applications | 4 | 60 |
| SP430 Interfacing and Nuclear Techniques | 4 | 60 |
| SP424 Clinical Monitoring A | 4 | 60 |
| SP425 Clinical Monitoring B | 4 | 60 |

Semester 5

| SA209 Work Experience | 5 | 75 |

Semester 6

| SA309 Work Experience | 5 | 75 |

Semester 7

| SP502 Special Project | 2 | 30 |
| SP610 Instrumentation Systems A | 4 | 60 |
| SP610 Instrumentation Systems B | 4 | 60 |
| SP626 Applied Biophysics B | 4 | 60 |
| SP625 Applied Biophysics A | 4 | 60 |
| SP609 Applied Neurosciences | 2 | 30 |
| SP609 Physics 6 | 2 | 30 |

4. 2056 Computing and Instrumentation

The computing major involves the study of algorithms used in the solution of mathematical, engineering and business problems, and the implementation of these in a suitable algorithmic or business-oriented language. The work is supplemented during the latter years of the course by studies in logic, programming techniques and systems science. The 'software' emphasis in computing is complemented by the strong 'hardware' orientation of Instrumental science. Areas of study in this major include nuclear and optical instrumentation together with a strong emphasis on information processing, and digital and analogue electronics.

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK104 Computer Science 1</td>
<td>5</td>
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<tr>
<td>SM108 Mathematical Methods</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>SP106 Physics or,</td>
<td>5</td>
<td>75</td>
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<tr>
<td>SP107 Physics</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>BS510 Business Studies</td>
<td>5</td>
<td>75</td>
</tr>
</tbody>
</table>

1 subject chosen from:

| SC154 Chemistry | 5 | 75 |
| SC108 Biology | 4 | 60 |

Semester 2

| SK304 Computer Science 2 | 8 | 120 |
| SM319 Mathematical Methods | 4 | 60 |
| SP210 Introduction to Instrumentation | 4 | 60 |
| SP209 Physics 2 | 6 | 90 |
| AB215 Complementary Studies | 2 | 30 |

Semester 3

| SP309 Physics 3 | 4 | 60 |
| SM319 Mathematical Methods | 4 | 60 |
| SP310 Analogue and Optical Techniques | 4 | 60 |
| SP330 Digital Fundamentals | 4 | 60 |
| SK324 Computer Science 3 | 8 | 120 |

Semester 4

| SP409 Physics 4 | 4 | 60 |
| SM419 Mathematical Methods | 3 | 45 |
| SP410 Analogue Devices and Applications | 4 | 60 |
| SP430 Interfacing and Nuclear Techniques | 4 | 60 |
| SK424 Computer Science 4 | 9 | 135 |

Semester 5

| SA209 Work Experience | 5 | 75 |

Semester 6

| SA309 Work Experience | 5 | 75 |

Semester 7

| SM519 Mathematical Methods | 3 | 45 |
| SP501 Signals and Systems | 4 | 60 |
| SP510 Scientific Instrumentation A | 4 | 60 |
| SP530 Scientific Instrumentation B | 4 | 60 |
| SK504 Computer Science 5 | 9 | 135 |

Semester 8

| SK601 Trends in Computing | 2 | 30 |
| SK604 Computer Science 6 | 8 | 120 |
| SP610 Stand-alone Instrumentation | 2 | 30 |
| SP610 Instrumentation Systems A | 4 | 60 |
| SP630 Instrumentation Systems B | 4 | 60 |

2 subjects chosen from:

| AB611 Science and Society | 2 | 30 |
| AB612 Science and Ethics | 2 | 30 |
| BS617 Computers and the Law | 2 | 30 |
| BS618 Management of Human Resources | 2 | 30 |

In 1991 SK504 will become SK524 and SK604 will become SK624.
5. 2059 Mathematics and Computer Science

The solution of many problems faced by business, industry and government can be facilitated by the use of mathematical and statistical models. The mathematics major concentrates on the operations research approach to problems such as inventory control and resource planning or allocation. Since many operations research and statistical studies result in or use, computer-based systems, this course is complemented by the computer science major.

The computer science major involves the study of algorithms used in the solution of mathematical, engineering and business problems, and the implementation of these in a suitable algorithmic or business-oriented language. The work is supplemented during the latter years of the course by studies in logic, programming techniques and systems science.

Full-time course
(1989 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSS11</td>
<td>Business Studies</td>
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</tr>
<tr>
<td>SC106</td>
<td>Science and Technology</td>
<td>3</td>
</tr>
<tr>
<td>SK104</td>
<td>Computer Science 1</td>
<td>5</td>
</tr>
<tr>
<td>SK105</td>
<td>Computer Science 1B</td>
<td>3</td>
</tr>
<tr>
<td>SM127</td>
<td>Mathematics 1</td>
<td>6</td>
</tr>
<tr>
<td>SM125</td>
<td>Applied Statistics 1</td>
<td>2</td>
</tr>
</tbody>
</table>

| Semester 2 | | |
| BSS12 | Business Studies | 4 | 60 |
| SP105 | Science and Technology | 3 | 45 |
| SK204 | Computer Science | 8 | 120 |
| SM202 | Operations Research 2 | 3 | 45 |
| SM206 | Applied Statistics 2 | 2 | 30 |
| SM227 | Mathematics 2 | 3 | 45 |

| Semester 3 | | |
| A2015 | Complementary Studies | 2 | 30 |
| SM304 | Industrial Case Studies | 2 | 30 |
| SK304 | Computer Science 3 | 8 | 120 |
| SM325 | Operations Research 3 | 3 | 45 |
| SM326 | Applied Statistics 3 | 2 | 30 |
| SM327 | Mathematics 3 | 3 | 45 |

| Semester 4 | | |
| SM404 | Project Management A | 3 | 45 |
| SK404 | Computer Science 4 | 9 | 135 |
| SM425 | Operations Research 4 | 3 | 45 |
| SM426 | Applied Statistics 4 | 3 | 45 |
| SM427 | Mathematics 4 | 3 | 45 |

| Semester 5 | | |
| BSS17 | Business Studies | 2 | 30 |
| SM504 | Project Management B | 2 | 30 |
| SK504 | Computer Science 5 | 9 | 135 |
| SM525 | Operations Research 5 | 4 | 60 |
| SM526 | Applied Statistics 5 | 3 | 45 |
| SM527 | Mathematics 5 | 2 | 30 |

| Semester 6 | | |
| SA209 | Work Experience |  | |
| SA309 | Work Experience |  | |
| SA409 | Work Experience |  | |

| Semester 7 | | |
| SA609 | Special Project | 4 | 60 |
| SK604 | Computer Science 6 | 8 | 120 |
| SM625 | Operations Research 6 | 5 | 75 |
| SM626 | Applied Statistics 6 | 3 | 45 |
| **Complementary Courses** |  | 4 | 60 |
| A511 | Science & Society | 2 | 30 |
| A512 | Science & Ethics | 2 | 30 |
| B517 | Computers and the Law | 2 | 30 |
| B518 | Management of Human Resources | 2 | 30 |

In 1991 SK504 will become SK534 and SK604 will become SK634

6. 2060 Double Major in Computer Science

The course features a blend of the traditional core curriculum of computer science together with studies in software engineering and software practice which will equip graduates with the skills necessary to participate in and manage teams of computing professionals who are developing large scale software systems.

Studies in computer science concentrate on programming skills in the language Ada and in C, the study of algorithms, and in the use of operating systems. Techniques of designing and building systems of software are studied in software engineering and software practice provides opportunity to learn about group dynamics and the management of teams working on projects. Software practice also provides extensive practical experience of working in teams which are developing large software systems for real clients.

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK104</td>
<td>Computer Science 1A</td>
<td>5</td>
</tr>
<tr>
<td>SK105</td>
<td>Computer Science 1B</td>
<td>3</td>
</tr>
<tr>
<td>SM106</td>
<td>Software Practice 1</td>
<td>6</td>
</tr>
<tr>
<td>SM127</td>
<td>Mathematics 1</td>
<td>6</td>
</tr>
<tr>
<td>BSS11</td>
<td>Business Studies</td>
<td>4</td>
</tr>
</tbody>
</table>

| Semester 2 | | |
| SK204 | Computer Science 2 | 8 | 120 |
| SK149 | Software Practice 1 | 4 | 60 |
| SM240 | Applied Statistics | 5 | 75 |
| SM227 | Mathematics 2 | 3 | 45 |
| BSS12 | Business Studies | 4 | 60 |

| Semester 3 | | |
| SK344 | Computer Science 3 | 8 | 120 |
| SK347 | Software Engineering 1 | 8 | 120 |
| SK349 | Software Practice 2 | 8 | 120 |

| Semester 4 | | |
| SK444 | Computer Science 4 | 6 | 90 |
| SK447 | Software Engineering 2 | 10 | 150 |
| SK349 | Software Practice 2 | 8 | 120 |

| Semester 5 | | |
| SA209 | Work Experience |  | |
| SA309 | Work Experience |  | |
| SA409 | Work Experience |  | |

| Semester 6 | | |
| SK544 | Computer Science 5 | 8 | 120 |
| SK547 | Software Engineering 3 | 4 | 60 |
| SK549 | Software Practice 3 | 8 | 120 |

| Semester 8 | | |
| SK644 | Computer Science 6 | 3 | 45 |
| SK646 | Computer Science Options | 7 | 105 |
| SK649 | Software Practice 3 | 10 | 150 |

* Course and course codes subject to approval.

7. H050 Environmental Health

This course is the statutory qualifying course for health surveyors in Victoria. It takes the form of a four-year program of cooperative education in which students attend the institute for a total of six semesters, and gain practical work experience for two semesters. Swinburne arranges the work experience for full-time students.

Full-time course
(1990 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B141</td>
<td>Introductory Law</td>
<td>3</td>
</tr>
<tr>
<td>MP107</td>
<td>Engineering Drawing and Sketching</td>
<td>2</td>
</tr>
<tr>
<td>SC100</td>
<td>Environmental Health (1)</td>
<td>2</td>
</tr>
<tr>
<td>SC199</td>
<td>Biology</td>
<td>4</td>
</tr>
<tr>
<td>SC150</td>
<td>Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>SM110</td>
<td>Mathematical Methods</td>
<td>3</td>
</tr>
<tr>
<td>SP119</td>
<td>Physics</td>
<td>5</td>
</tr>
</tbody>
</table>
8. Z061 Bachelor of Applied Science (Honours)

Bachelor of Applied Science (Honours) in areas of applied chemistry, biochemistry, medical biophysics, instrumental science, computer science and mathematics will be offered in 1995 (subject to accreditation). This will be a one year full-time program, comprising formal coursework and a major research project.

1050 Bachelor of Information Technology

The course equips graduates to meet the shortage of professionals in the application of information technology within business and industry and with an appropriate grounding in management education to prepare them for future roles in management.
Postgraduate courses

Graduate Diploma in Applied Science

This qualification is awarded to students who have completed one of several approved programs of subjects. Programs are offered in Biomedical Instrumentation, Computer Science, Scientific Instrumentation, Industrial Chemistry, Operations Research and Social Statistics.

Options are designed as two-year part-time courses offered only in the evening and extending over four fifteen-week semesters, except for Industrial Chemistry which is a one-year full-time course, and Computer Science which is also offered as a one-year full-time as well as a two-year part-time course.

Not all subjects, nor all options are available in any one year, student demand being taken into account in determining which subjects or options will be offered.

ZO84 Biomedical Instrumentation Option

(1983 syllabus)

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.

To qualify, a candidate must complete eight of the subjects listed below, at least six of which must be at the advanced level, including the project and at least two biomedical subjects.

Each subject comprises sixty hours of class time (one evening per week for one semester).

Enrolment in introductory subjects must be approved by the Head, Physics Department.

List of subjects

<table>
<thead>
<tr>
<th>Biomedical subjects</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP555 Introduction to Biophysical Systems</td>
<td>4</td>
<td>60</td>
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<tr>
<td>Advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP531 Biophysical Systems and Techniques</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP532 Clinical Monitoring Techniques</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP533 Aspects of Metabolic Measurements</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP534 Neurophysiological Techniques</td>
<td>4</td>
<td>60</td>
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<tr>
<td>SP537 Medical Imaging (subject to approval)</td>
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<tr>
<td>Instrumentation subjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introductory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP551 Instrumentation Principles and Techniques</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP552 Introduction to Scientific Instrumentation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP553 Introduction to Instrumentation Electronics</td>
<td>4</td>
<td>60</td>
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<tr>
<td>EE554 Electronic Systems</td>
<td>4</td>
<td>60</td>
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<tr>
<td>Advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP541 Signal Processing</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP542 Optical Instrumentation</td>
<td>4</td>
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<tr>
<td>SP543 Vacuum Systems</td>
<td>4</td>
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<tr>
<td>SP544 Nuclear Instrumentation</td>
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<tr>
<td>SP545 Instrument Programming and Interfacing</td>
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<td>60</td>
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<tr>
<td>SP546 Instrument Systems</td>
<td>4</td>
<td>60</td>
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<tr>
<td>SK551 Chemical Instrumentation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK531 Computer Programming Techniques</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SK533 Computer Simulation</td>
<td>4</td>
<td>60</td>
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<tr>
<td>EE541 Control Theory Applications</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>EE542 Applications of Computer Devices</td>
<td>4</td>
<td>60</td>
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<tr>
<td>EE543 Data Transmission for Instrumentation</td>
<td>4</td>
<td>60</td>
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<tr>
<td>Project unit</td>
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</tr>
<tr>
<td>SP535 Project (Biomedical)</td>
<td>4</td>
<td>60</td>
</tr>
</tbody>
</table>

2088 Computer Science

(1989 syllabus)

This option is for graduates who require a specialised and practical training in the related areas of computer programming and software engineering and their applications to information technology.

To qualify a student must complete the seven subjects listed below. These form a one-year full-time program or a two year part-time (evening) program. The full-time program normally requires attendance for six hours per week for two semesters and the part-time program eight hours per week for four semesters.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK701 Imperative Programming</td>
<td>4</td>
</tr>
<tr>
<td>SK702 Selections from Computer Science</td>
<td>4</td>
</tr>
<tr>
<td>SK703 Database Design and Implementation</td>
<td>4</td>
</tr>
<tr>
<td>SK704 Software Engineering</td>
<td>4</td>
</tr>
<tr>
<td>SK705 Systems Programming</td>
<td>4</td>
</tr>
<tr>
<td>SK706 Introduction to Artificial Intelligence</td>
<td>4</td>
</tr>
<tr>
<td>SK712 Software Development Project (two semesters)</td>
<td>4</td>
</tr>
</tbody>
</table>

ZO83 Scientific Instrumentation Option

(1984 syllabus)

This option is designed to serve the needs of graduates who require an advanced knowledge in modern instrumentation. It offers training in scientific and engineering faci that will develop knowledge in the design, construction and operation of modern laboratory instrumentation.

To qualify, a student must complete eight of the subjects listed below. At least six of which must be at the advanced level including the project.

Each subject comprises sixty hours of class time (one evening per week for one semester).

Enrolment in introductory subjects must be approved in each case by the Head, Physics Department.

List of subjects

<table>
<thead>
<tr>
<th>Introductory</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP551 Instrumentation Principles and Techniques</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP552 Introduction to Scientific Instrumentation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP553 Introduction to Instrumentation Electronics</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>EE554 Electronic Systems</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>Advanced</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP541 Signal Processing</td>
<td>4</td>
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<tr>
<td>SP542 Optical Instrumentation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP543 Vacuum Systems</td>
<td>4</td>
<td>60</td>
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<tr>
<td>SP544 Nuclear Instrumentation</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP545 Instrument Programming and Interfacing</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>SP546 Instrument Systems</td>
<td>4</td>
<td>60</td>
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<tr>
<td>SK551 Chemical Instrumentation</td>
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<tr>
<td>SK531 Computer Programming Techniques</td>
<td>4</td>
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<tr>
<td>SK533 Computer Simulation</td>
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<td>60</td>
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<tr>
<td>EE541 Control Theory Applications</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>EE542 Applications of Computer Devices</td>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>EE543 Data Transmission for Instrumentation</td>
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<td>60</td>
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<tr>
<td>Project unit</td>
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</tr>
<tr>
<td>SP535 Project (Scientific)</td>
<td>4</td>
<td>60</td>
</tr>
</tbody>
</table>
2081 Graduate Diploma in Applied Colloid Science
(1980 syllabus)

This course is for graduates with a background in chemistry who have a professional interest in the application of colloid science to industrial problems.

The program includes a variety of topics designed to cover the requirements of a wide range of industries. It comprises, in the first two semesters, a compulsory core of lectures and associated practical work which acquaints the student with the fundamental properties of colloids and interfaces, followed in the next two semesters by a series of elective subjects from which two are chosen.

The program is a two-year part-time course, the timetable specifying eight hours per week (two evenings) for four fifteen-week semesters.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>SC530</td>
<td>Properties of Colloids</td>
<td>8</td>
</tr>
<tr>
<td>SC531</td>
<td>Colloid Experimental Techniques</td>
<td>8</td>
</tr>
<tr>
<td>SC532</td>
<td>Elective Subject</td>
<td>8</td>
</tr>
</tbody>
</table>

The elective subjects are chosen from the following list:

- SC532 Emulsion Technology
- SC533 Polymer Flocculation
- SC534 Mineral Processing Chemistry
- SC535 Detergency
- SC536 Surface Coatings
- SC537 Corrosion and Protection of Metals

These subjects will not all be offered in any one year. Their availability will be determined by student demand. The list may be augmented to meet students’ requirements.

2082 Graduate Diploma in Industrial Microbiology
(1979 syllabus)

This course is for graduates or diplomates in chemistry, biochemistry or other life sciences, or engineering (though it is not necessarily restricted to these fields), whose professional activities require a practical knowledge of industrial microbiology.

The course provides theoretical knowledge and applied practical skills in all areas of microbiology, with particular emphasis on applied microbiology, including such areas as fermentation technology, growth kinetics, biotechnology, genetic engineering and the identification and control of microbes.

The areas of study are suitable for personnel engaged in production, sales, services and management in industrial and other fields. Special provision is made early in the course for those students whose knowledge of biochemistry is minimal or out-of-date.

The program is designed as a two-year part-time course, the timetable specifying seven hours (two evenings) per week for four fifteen-week semesters.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC541</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC542</td>
<td>Practical Work</td>
<td>4</td>
</tr>
<tr>
<td>SC543</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC544</td>
<td>Practical Work</td>
<td>4</td>
</tr>
</tbody>
</table>

Semester 3

SC545 Microbiology | 3 | 45 |
SC546 Practical Work | 4 | 60 |

Semester 4

SC547 Microbiology | 3 | 45 |
SC548 Practical Work | 4 | 60 |

2085 Graduate Diploma in Industrial Chemistry
(1988 syllabus)

This course is designed for graduates with a general background in chemistry 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 19 weeks of coursework related to industrial chemistry and 22 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.

16 points accumulated from the following subjects:

List of subjects

<table>
<thead>
<tr>
<th>Semester</th>
<th>Max Points</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS520</td>
<td>Chemistry and the Law</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC520</td>
<td>Applied Chemistry Techniques</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SC521</td>
<td>Properties of Colloids &amp; Interfaces</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SC522</td>
<td>Food Chemistry</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC523</td>
<td>Industrial Chemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SC524</td>
<td>Polymer Chemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SC525</td>
<td>Practical Chemistry</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>SC526</td>
<td>Advanced Biochemistry</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC527</td>
<td>Biochemical Techniques</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC528</td>
<td>Industrial Biochemistry</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC529</td>
<td>Industrial Microbiology</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SC530</td>
<td>Microbiology</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SC531</td>
<td>Practical Biochemistry</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SK720</td>
<td>Computer Science</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Semester 2

BS721 Employment Experience
SC710 Business and Management

ZO86 Graduate Diploma in Social Statistics
(1989 syllabus)

The course is designed for graduates in the social sciences who have a professional interest in improving their quantitative and statistical skills. It is also suitable for graduates of other disciplines who have a need to gain statistical skills particularly in the area of computer based analysis and interpretation.

To qualify a student must complete the eight subjects listed below. These form a two-year part-time (evening) program which entails an involvement of eight hours per week.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM731</td>
<td>Introductory Methods</td>
<td>4</td>
</tr>
<tr>
<td>SM732</td>
<td>Survey Research Methods</td>
<td>4</td>
</tr>
<tr>
<td>SM733</td>
<td>Demographic Techniques</td>
<td>4</td>
</tr>
<tr>
<td>SM734</td>
<td>Computer Packages 1</td>
<td>4</td>
</tr>
<tr>
<td>SM735</td>
<td>Survey Sampling</td>
<td>4</td>
</tr>
<tr>
<td>SM736</td>
<td>Computer Packages 2</td>
<td>4</td>
</tr>
<tr>
<td>SM737</td>
<td>Multivariate Analysis</td>
<td>4</td>
</tr>
<tr>
<td>SM738</td>
<td>Major Project</td>
<td>4</td>
</tr>
</tbody>
</table>
2087 Graduate Diploma (Operations Research) (1989 syllabus)
The course is aimed primarily at graduates with a quantitative background, and aims to supplement the student's professional education with a more specialised and practical training of an applied type, which will enable them to pursue careers in operations research.

The course is subdivided into units of four hours per week (two hours of lectures, two hours of workshops) for one semester.
The workshops will provide students with significant access to the institute's hardware and software, enabling hands-on experience devoted to practical and research work. Two units will normally be taken each semester.

Semester 1
- SM721 Introduction to Operations Research 4 60
- SM722 Stochastic Methods in OR 1 4 60
Semester 2
- SM723 Mathematical Programming 4 60
- SM724 Stochastic Methods in OR 2 4 60
Semester 3
- SM725 Project Management 4 60
- SM726 Operations Research in Industry 1 4 60
Semester 4
- SM727 Operations Research in Industry 2 4 60
- SM728 Major Project 4 60

ZO91 Master of Applied Science (Applied Colloid Science) by coursework (1985 syllabus)
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 builds on the Graduate Diploma in Applied Colloid Science by providing a program of lectures at an advanced level. Students are also required to undertake a research project at their place of work. This project is to be reported as a minor thesis.
The program is a two-year part-time course comprising two hours of lectures per week plus a research project. The research project is expected to be the equivalent of five hours per week. Research may be undertaken at the place of employment, with the Swinburne Colloid Laboratory or similar institutions.

A feature of this course is the contribution to the lecturing program by leading researchers from academic and industrial organisations within Australia.
The semester units have been structured so that students may commence the course in February or July of any year.

Semester 1
- SC710 Dispersion Forces and Thin Films 2 30
- SC714 Colloid Research Project 5 75
Semester 2
- SC711 Electrical Double Layer, Steric Stabilisation and Polymer Theory 2 30
- SC714 Colloid Research Project 5 75
Semester 3
- SC712 Association and Colloid Rheology 2 30
- SC714 Colloid Research Project 5 75

2092 Master of Applied Science (Information Technology) (1989 syllabus)
The Master of Applied Science (Information Technology) involves two year full-time or four year part-time study.

This course is designed to provide a formal, structured program, covering the main areas of Information Technology with the flexibility to allow cross-disciplinary studies with the other Swinburne Masters degree courses in Information Technology and where appropriate to take special electives at other institutions. The course is designed for those who aspire to management level or senior technical positions in the computer industry, in technical organisations with major computer-based products or processes, or in management consulting with software houses or management services organisations.

The subjects of the first year full-time or the first and second year part-time of the course are those of the Graduate Diploma course in Computer Science. The full-time program normally requires attendance for sixteen hours per week for two semesters and the part-time program eight hours per week for four semesters.
The subjects of the second year (full-time) and third and fourth year (part-time) are listed below. Students are required to complete four elective units plus SK812 Project and Thesis.

Subject Hours/week
- SK801 Philosophical Aspects of A.I. 4
- SK802 Expert Systems Programming 4
- SK803 Database Technology 2 4
- SK804 Analysis of Computer Systems Performance 4
- SK805 Advanced Software Engineering 4
- SK806 Machine Learning 4
- SK807 System Analysis and Design Methodology 4
- SK812 Project and Thesis One Semester Full-time 16
- Two Semesters Part-time 8

ZO90 Master of Applied Science by research in areas of applied chemistry, biochemistry, biophysics, instrumental science, computer science and mathematics

Graduates at Bachelor's degree level who have shown a high standard of academic achievement may be admitted to candidature for the degree of Master of Applied Science.

To be assessed for this degree, a candidate must present a major thesis based on original research, investigation or development work carried out either at Swinburne or externally. External work may be carried out at any approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.
Degree of Doctor of Philosophy

in areas of applied chemistry, biochemistry, biophysics, instrumental science, computer science and mathematics

Graduates at Master's level who have shown a strong capacity for research and investigational work in the area of study proposed may be admitted to candidature for the degree of Doctor of Philosophy.

To be assessed for this degree a candidate shall carry out a program of research, investigation or development involving the submission of a major thesis embodying the results of that program.

Copies of the Statute for the degree of Doctor of Philosophy and application forms are available from the Registrar's Office.

Applied Science subject details

This section contains a brief description of the subjects which comprise the Applied Science courses.

Reading guides

Because of the frequency with which individual publications become out-dated, and are suspended, no textbooks and references are listed in the subject details.

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.

Subject details

Subject codes are listed in numerical order within the following groups.

Code

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>Applied Science</td>
<td>SC Chemistry</td>
<td>SK Computer Studies</td>
<td>SM Mathematics</td>
<td>SP Physics</td>
<td>AB Liberal Studies</td>
<td>BS Business</td>
<td>CE Civil Engineering</td>
<td>EE Chemical Engineering</td>
<td>ET Electrical and Electronic Engineering</td>
<td>IT Information Technology</td>
<td>ME Mechanical Engineering</td>
<td>MP Manufacturing Engineering</td>
</tr>
</tbody>
</table>

SA109 Work Experience

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 (Environmental Health). Students are supervised by a member of the academic staff, and are required to complete a Competency Attainment Program.

SA209 Work Experience

A six-month period of work experience occurring as part of the second or third year of the course leading to the degree of Bachelor of Applied Science. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA308 Work Experience

A six-month period of work experience occurring as part of the third year of the course leading to the degree or diploma of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to complete a Competency Attainment Program.

SA309 Work Experience

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. Students are supervised by a member of the academic staff, and are required to submit a report to their employer and to their supervisor.

SA311 Building Constructions (1)

A second-year subject of the degree course in environmental health.

Introduction to the elements of construction with particular emphasis on housing including timber framed, brick veneer, and cavity brick dwellings. This includes an examination of foundations, footings, internal and external claddings, framing and roof structures.

The section will canvass the various forms of construction in conjunction with the relevant provisions of the Victorian Building Regulations and the Timber Framing Code. It will also be concerned with construction practices related to concrete, steel, timber, and masonry.

SA411 Building Construction (2)

A second-year subject of the degree course in environmental health.

Introduction to waste disposal theory with reference to the following systems — vented, vented modified, single stack, single stack modified, introduction to waste disposal fittings — including standards of installation, applications, and methods of inspection.

SA601 Chemical Data Processing

A fourth-year subject of the degree course in environmental health.

Chemical and computer-aided instrumentation and data processing. The course will cover laboratory practice and the use of computer interfaces and software packages (DCS, PC-Write, LOTUS). The laboratory software package (infrared, chromatography and atomic absorption) and computer interfacing and hardware, data acquisition and laboratory data handling.

SA609 Special Project

A fourth-year subject of the degree courses in computing and instrumentation.

The subject comprises individually or group work and may involve practical work and/or a written assignment in an area considered necessary for completion of the course.

SC100 Environmental Health

A first-year subject of the degree course in environmental health.

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 health surveyor 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 health surveyor is required to administer.

SC105 Science and Technology

A first-year subject of the degree course in mathematics and computer science.

The subject will be taught by lectures, lecture-demonstrations, laboratory classes, seminars and tutorials.

Introduction: The scope and status of science and scientific research in Australia. The basic role of science in commerce and technology. The prospects for Australian science. Future developments in science and applications of science.
Industrial Chemistry: Description of the chemical industry in Australia — extent, size, potential. Raw chemical resources in Australia. How value is added to chemical resources. Likely future developments in the chemical industry. Problems faced by the chemical industry. Guidance provided by the chemical industry and by professional associations on environmental monitoring, waste treatment etc.

SC108 Biology
Four hours per week for one semester
A first-year subject of the degree course. The course introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialisation functions and then proceeds to treat the following systems in some detail.

Cardiac output. Regulation of heart rate and blood pressure, shock. Conduction in the heart. Mechanisms of heart output. Extracellular volume and osmolality. Digestive system: the arrangement and functions of the digestive system. Skeletal system: calcium regulation, structure of bone. Anatomy of the skeleton. Nervous system: nerves and excitability; transmission, the synapse; electroencephalographs. 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. During teaching of the above topics safety measures will be emphasised. 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 and the demonstration of cardiopulmonary resuscitation. Extensive use is made of anatomical charts, biological models and such specialized equipment as spirographs and electrocardiographs. Microcomputers are used by students in exercises that simulate certain body functions.

SC109 Biology
Four hours per week for one semester
A first-year subject of the degree course in environmental health. For details, see SC108 Biology.

SC150 Chemistry
Five hours per week for one semester

SC154 Chemistry
Five hours per week for one semester
A first-year subject of the degree course in applied science, except environmental health. Quantitative aspects of chemical reactions. Properties of chemical reactions: extent and equilibria; gaseous equilibrium; solution equilibria; kinetics; applications. Energy from chemical reactions: heat energy = thermochemistry; Hess's law; electrical energy = redox; galvanic cells; electrode potential; Nernst equation; applications. Chemistry of metals: general properties, distribution economic importance of metals; metallic and heavy metals in air and water; analysis of metals; corrosion of metal. Practical chemistry: equilibria; thermochemistry; redox chemistry of metals.

SC208 Biology
Six hours per week for one semester
A first-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry. Chemical basis of nutrition: an introduction to the molecules and compounds which are commonly found in the normal diet. In this unit an outline will be given of the fate of ingested glucose, protein and fat, the role of vitamins and trace elements, and the energy and calorific content of food. An attempt will be made to relate certain disease processes to nutritional states and indicate some problems associated with food toxicity. Basic microbiology: an introduction to the microbial world to include the history, nature and scope of microbiology. Elements of the microbial world to range from viruses, rickettsia, chlamydia, bacteria, algae and blue-green algae, fungi and protozoa. Method of handling micro-organisms, methods of isolation and methods of growth. Relationships between micro-organisms and pathogenicity. Genetics: early ideas about inheritance. Mendel's laws. Meiosis, crossing over and linkage of genes. Interactions between genes and polygenic inheritance. Six determination. Aspects of human genetics. The nature of DNA and the Watson-Crick model of DNA structure. The replication of DNA. RNA species, the genetic code and protein synthesis. The nature of mutation. Recombinant DNA and genetic engineering. The structure and genetic organisation of viruses, bacteria and eucaryotic chromosomes.

SC209 Biology
Six hours per week for one semester
A first-year subject of the degree course in environmental health. For details see SC208 Biology.

SC250 Chemistry
Five hours per week for one semester

SC254 Chemistry
Twelve hours per week for one semester
A first-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry. Structure of elements and molecules: spectra; energy levels; electronic configuration of elements; periodic table; shapes of atoms; arrays Chemical bonding: covalent; polar; metallic; hybridization; multiple bonds; resonance. Organic chemistry: alkenes and alkylnes; benzene and other aromatic compounds; alcohols; ethers; nitriles and amines; aldehydes and ketones; carboxylic acids and their derivatives. Inorganic chemistry: ionic bonding; intermolecular bonding. Analytical chemistry: precipitation equilibria; complex ion equilibria.
Physical chemistry: thermodynamics; First and Second Law; physical chemistry; free energy and equilibria.
Practical chemistry: bonding; inorganic and analytical; organic; physical.

SC255 Chemistry
Four hours per week for one semester
A first-year subject of the degree course in medical biophysics and instrumentation.
Chemical bonding: ionic, covalent, metallic bonds; hydrogen bonds; van der Waals' bonding.
Thermodynamics: entropy, free energy; relation to chemical equilibrium.
Organic chemistry: alkanes, alkenes, alkynes; benzene and derivatives; alcohols, aldehydes, carboxylic acids; esters, ethers, amines, amides; IUPAC nomenclature; polymers.
Chemistry of living cells: homeostasis; major organic groupings in tissues; biologically useful energy and ATP.
Protein structure and function: membrane potentials; impulse transmission.
Generation of ATP: glycolytic pathway; anaerobic ATP generation; Kreb's cycle; fatty acid oxidation; electron transport; oxidative phosphorylation.

SC318 Microbiology
Four hours per week for one semester
A second-year subject in the degree course in computer-aided biochemistry.
Introduction to the mechanism of production of antibodies in response to antigens. Vaccination and immunisation.
Practical work will be conducted in conjunction with the above topics.

SC340 Applied Food Science
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
Food processing: introduction to processes used in the food industries for the preparation and processing of foods. Problems or potential problems associated with those processes that have implications for community health.
Food chemistry: techniques used in the determination of the amounts of carbohydrate, protein and lipid in foods. Determination of the amounts of micro-nutrients in foods. Methods used for determining the water content of foods. Determination of the calorie or joule contents of foods. Other manual and instrumental techniques used in food analysis (e.g. determination of sulphur dioxide, pesticide residues, etc.). Palatability and digestibility of foods, chemical stability of foods. Chemical additives to food will be considered under the following headings: chemical classes of food additives, aspects permitted, compounds, reasons for use, function, advantages, disadvantages, breakdown pathways, toxicity testing, regulations controlling use. Classes of chemical additives to be considered will include the following: preservatives, antioxidants, flavouring compounds, colouring compounds, sweetening agents, flavour enhancers, nutraceuticals, emulsifiers.

SC349 Microbiology
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
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.
Immunology: basic tenets of immunology to include the mechanism of production of antibodies in response to antigens. Vaccination and immunisation.

SC353 Applied Chemistry
Four hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry.
Industrial energy sources: coal, oil, natural gas and nuclear.
Inorganic reactions: a study of the major classes of inorganic reactions and their application to the separation and identification of common metal cations and anions in multicomponent solutions and commercial products.
Kinetics of complex reactions: consecutive, parallel and reversible first order reactions; non-equilibrium initial concentrations; enzyme kinetics; free radical and chain reactions; the internal combustion engine and air pollution; batch and flow reactors.
Introduction to chemical processing: flow diagrams; fluid flow; heat transfer; equilibrium constant; mass balance; energy balance; separation processes; process analysis; process control; example case study.

SC360 Practical Chemistry
Three hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry.
Analytical techniques: volumetric analysis, analysis by electro deposition and a project in quantitative atomic absorption analysis.
Physical experiments: kinetics and spectroscopy.
Computer applications: computer controlled instruments, laboratory data handling, simulation.

SC362 Biochemistry
Two hours per week for one semester
A second-year subject in the degree course in computer-aided biochemistry.
Introduction to biomolecules: monosaccharides, disaccharides, polysaccharides, amino acids, peptides, structure of proteins, lipids, nucleotides, enzymes, coenzymes, nucleic acids.
Enzyme kinetics: simple enzyme mechanisms, Michaelis-Menten kinetics, inhibition.
Catabolic pathways: catabolic pathways for carbohydrate, lipid and protein.
Biosynthesis of ATP.

SC365 Practical Biochemistry
Four hours per week for one semester
A second-year subject in the degree course in computer-aided biochemistry.
Laboratory exercises associated with the properties of biomolecules, quantitative determination of biomolecules, isolation and preparation of biological samples, enzyme preparations and assays, enzyme kinetics.
Computer simulation will be used in conjunction with a laboratory exercise in the teaching of enzyme kinetics.

SC370 Chemistry
Six hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry.
Thermodynamics: formation; reaction; variations with temperature; chemical potentials; available work.
Phase equilibria: one and two component systems, with emphasis on practical applications.
Organic chemistry: acidity, basicity and electronic effects. Carbonyl reactions, application to synthesis. Aromatic compounds.
Descriptive inorganic chemistry: chemistry of the main group elements.
SC380 Practical Chemistry
Five hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry. 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
Three hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry. Laboratory data. Binary computer interfacing to instruments, data acquisition and display. Reduction of noise and enhancement of information. Methods of enhancing signal-to-noise ratios. Methods of peak-picking and integration. Methods of spectral manipulation, especially in relation to infrared spectroscopy, library searching. Packaging relating to specific instruments to be integrated with laboratory work. Software packages: statistics, graphics, word-processing (to be used in laboratory reports). Simulations: principles and applications of simulations. Writing programs for simple simulations (e.g., kinetics).

SC400 Environmental Health (2)
Two hours per week for one semester

SC410 Environmental Health Field Practice (1)
Three hours per week for one semester
A second-year subject of the degree course in environmental health. This subject complements Environmental Health and is used to give students inspection, evaluation and report writing experience in vocational topics taught in that subject as preparation for work experience. Visits are made to septic tank installations and small sewage plants during construction and testing for compliance. Public buildings are visited, as are apartment houses, boarding houses, hotels and food establishments. The two major areas covered are:
1. (a) Business communications (e.g., memos, letter-writing, preparing for interviews),
(b) What to expect in the workplace — the people, the environment, the communication needs.
(c) Simulated interviews using video, feedback and evaluation.

SC414 Industrial Problem-Solving
Two hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry. Company organisation and communications: problem-solving, data bases, production costs for different processes, chemical inter-relationships, chemical economics, group problem-solving, chemistry case study, decisions case study.

SC418 Microbiology
Three hours per week for one semester

SC440 Applied Food Science
Four hours per week for one semester
A second-year subject of the degree course in environmental health. Food hygiene (This unit complements SC449 Microbiology) Microbiological factors — micro-organisms involved in food spoilage (especially in relation to the dairy, meat, wine, canning and bottling industries). Condensation and sanitising of plant and equipment. Bacterial food poisoning outbreaks. Food handling techniques. Methods of examination of food, milk and water for the presence of pathogenic bacteria.

SC449 Microbiology
Three hours per week for one semester
A second-year subject of the degree course in environmental health. Taxonomy and identification of the major groups of pathogenic 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 (e.g., causative agents of botulism or scarlet fever). Bacterial toxins. Nature, structure and pathogenicity of major exotoxins, enterotoxins and enterotoxins produced by bacteria. Identification of toxins and their relationship to food poisoning. Bacterial food poisoning outbreaks. Food handling techniques. Methods of examination of food, milk and water for the presence of pathogenic bacteria.

SC452 Epidemiology
Two hours per week for one semester

SC453 Applied Chemistry
Two hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry. 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. Infrared and nuclear magnetic resonance (NMR) properties of polymers and amino acids, including molecular weight determinations and crystallinity by X-ray spectroscopy.

SC460 Practical Chemistry
Three hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry. Organic techniques: synthesis, recrystallisation, extraction, separation by column chromatography, identification and characterisation of an unknown compound and an unknown mixture of two compounds. Computer applications: computer-controlled instruments, word processor, software packages.
SC462 Biochemistry
Two hours per week for one semester
A second-year subject in the degree course in computer-aided biochemistry.

Anabolic pathways: biosynthetic pathways leading to glucose, glycogen, lipid, protein, DNA.

Regulation and control of metabolism: control mechanisms operating at the level of the gene and at enzyme level. Examples will particularly be drawn from fermentation pathways.

This subject will particularly use literature assignments in order to cover the syllabus.

SC465 Practical Biochemistry
Three hours per week for one semester
A second-year subject in the degree course in computer-aided biochemistry.

Laboratory exercises will involve studies of selected metabolic enzymes, preparation, purification, characterisation of proteins, induction of a bacterial enzyme, preparation of organelles, metabolic studies using yeast. Computer modelling of biomolecules.

SC470 Chemistry
Five hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Descriptive inorganic chemistry: selected compounds of main group elements — thermodynamics of formation, chemistry.

Co-ordination chemistry: fundamentals.

Chromatography: general principles; column chromatography, GC, HPLC.

Analytical chemistry: sampling.

Spectroscopy: basic instrumentation; IR, atomic and UV/visible spectra.

SC480 Practical Chemistry
Five hours per week for one semester
A second-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Software packages: introduction to other general packages of use in chemistry (e.g. dBASE, Lotus, scientific word-processing).


Literature and Patent Searches: to be arranged in conjunction with the library — students to carry out searches as part of literature reviews and research projects.

SC504 Human Biochemistry
Two hours per week in semester seven
A fourth-year subject in the degree course in computer-aided biochemistry.

Control mechanisms operating at the whole animal level. Perturbations of metabolism. Clinical biochemistry.

SC510 Practical Food Inspection
Three hours per week for one semester
A fourth-year subject of the degree course in environmental health.

This subject complements Applied Food Science. Visits will be arranged to the food industry being studied theoretically in Applied Food Science. These include:

— milk pasteurisation and other dairy food plants
— meat and smallgoods establishments
— fish wholesalers
— poultry processing works
— frozen food manufacturers, drying and canning plants
— fruit juice manufacturers
— breweries.

SC530 Properties of Colloids
One hundred and twenty hours in one semester
A core subject of the graduate diploma course in applied colloid science.

Principles

Applications
Throughout this compulsory section, particularly during tutorials, strong emphasis is upon applying the basic theory to practical examples.

Practical work
The basic practical skills and techniques of colloid science are taught here and are drawn from the following areas:

Cleaning techniques and surface preparation; the measurement of surface tension, interfacial tension, adsorption at the solid-liquid interface — determination of surface concentrations; adsorption at the solid-liquid interface — determination of particle size; adsorption isotherms for colloids of dissolved materials; inorganic sols — preparation, critical floculation concentration, protective action, heterofloculation; the properties and behaviour of macromolecules in aqueous solution.

SC531 Colloid Experimental Techniques
One hundred and twenty hours in one semester
A core subject of the graduate diploma course in applied colloid science.

Principles

Applications
Selected practical problems are dealt with in order to demonstrate the relevance of the various techniques.

Practical work
Electrokinetic techniques — streaming potential, microelectrophoresis; potentiometric and conductimetric techniques; measurement of floculation rate and colloidal stability; determination of particle size; surface spectroscopic studies, etc.
SC532 Emulsion Technology

An elective subject in the graduate diploma course in applied colloid science.

Principles
- Properties and characteristics of emulsions: The theory of stability, the role of stabilisers.
- Selection of macromolecules as emulsion stabilisers, stabilisation by finely divided solids, properties of thin films.

Methods:
- Making real emulsions, HLB and PIT systems.
- The behaviour of surfactants and micelles.

Applications
- Selected case studies are dealt with from the area of cosmetic emulsions, food emulsions, bitumen emulsions, wax emulsions, etc.
- The design of steric and electrostatic stabilisers.
- Microemulsions.

SC533 Polymer Flocculation

An elective subject in the graduate diploma course in applied colloid science.

Principles
- Types of flocculants: natural, synthetic, metal ions. Flocculants in solution.

Applications
- General principles of water treatment — selected case studies (e.g., iron removal, removal of emulsified oils). Flocculation of clays, paint pigments, etc.

Practical work
- Assessment of stability: methods for screening flocculants; effect of flocculant dosage, molecular weight on flocc formation; the co-operative effect of metal ions on flocculation; floc building; and stability.
- Methods for determining low concentration of flocculants; minor project work.

SC534 Mineral Processing Chemistry

An elective subject in the graduate diploma course in applied colloid science.

Principles
- Minerals analysis: XRF, XRF, electron microprobe. Particle liberation — crushing, grinding, classifying (brief coverage of these areas).
- Mineral flotation — wetting, hydrophobically. Activators, frothers, collectors and depressants — solution properties, behaviour. Flotation of sulphides — semiconductor properties of the mineral; action of collectors and metal ions. Coal flotation. Floation of silicates, oxides, etc.
- Chemistry of mineral slurries. Flocculation of minerals — selective flocculation, fine particle recovery, etc.

Applications
- Wints in mineral analysis: particle size analysis; interfacial properties of minerals; zeta potential, surface charge; adsorption of collectors; contact angle and bubble pick-up techniques; flotation studies — Hallimond tube, Fuerstenau cell. Vacuum flotation techniques; role of pH. E° and metal ion concentration in flotation; selective flocculation; selected case studies; minor project work.

SC535 Detergency

An elective subject in the graduate diploma course in applied colloid science.

Principles
- The origin, manufacture, nature and use of detergents. The principal types of detergents, the role of additives, etc.
- Detergent action — adsorption at interfaces, wettabilty and contact angles. Solution properties of detergents — micelle formation, phase diagrams, solubilisation, surface tension, etc. The differences in behaviour between cationic, anionic and non-ionic detergents.
- Methods of analysis (e.g., ranging from cloud point determination and two-phase titrations to infra-red and NMR analysis). Detergent biodegradability (brief treatment).

Applications
- Detergent formulation for specific needs, e.g., softeners, conditioners, emulsification, etc. Particular case studies are dealt with here.

Practical work
- The adsorption of detergents — degree of adsorption, effect on contact angle, effect on zeta potential; solution properties of detergents — surface tension, critical micelle concentration, phase diagrams; detergent analysis — titrations, instrumental analysis; experiments on selected problems are performed (e.g., removal of lanolin from wool, formulation of hair shampoos, etc.); minor project work.

SC536 Surface Coatings

An elective subject in the graduate diploma course in applied colloid science.

Principles
- Purpose and type of coatings. Coating components. Surface physics — colour, reflectivity. Specific coatings — non-convertible, convertible, anodizing, thin films, etc.
- Pigment dispersion. Rheology. Preparation of surfaces.

Applications
- Selected case studies with a strong emphasis on tailoring a particular coating for a specific surface.

Practical work
- The structure of silicone coatings and their correlation with wettability and adhesive strength; formulation of a simple paint. Rheology properties; dispersion of pigments; preparation of droplets; preparation of a characterisation of coatings; characterisation of coated surfaces (e.g., by electronic microscope); minor project work.

SC537 Corrosion and Protection of Metals

An elective subject in the graduate diploma course in applied colloid science.

Principles
1. Equilibrium electrochemistry (brief treatment). Elementary aspects: redox reactions; electrochemical cells; Nernst equation; conventions.
- Thermodynamic effects: relationship between E° and equilibrium constant; effects of inert electrolytes, competing reactions and pH; Pourbaix diagrams; limitations in the use of the Nernst equation.

Applications
- The effect of corrosion cell factors affecting corrosion — cathodic protection, anodic protection, etc. Case studies drawn from the following areas are dealt with: corrosion by potable water and in the marine environment; corrosion in steam condensers; cathodic protection; sacrificial protection; metallic coatings; oxide protection; magnetic and organic protective coatings; dezincification of brass; methods of construction in a chemical plant; economic aspects in combating corrosion; minor project work.

Practical work
- Measurement of equilibrium cell potentials; galvanostatic and potentiostatic techniques; practical experiments demonstrating inhibition, etc.
SC540 **Applied Food Science**

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

A detailed study of the production of important food products, in particular, those that are potentially hazardous or liable to spoilage, for example:

- milk and other dairy foods;
- meat products (including small goods), poultry, fish;
- frozen, dried, canned and artificially preserved foods;
- bread manufacture;
- fruit juices;
- fermented products.

SC541 **Microbiology**

Three hours of theory per week for one semester

A subject of the graduate diploma course in industrial microbiology.

Introduction to microbiology; eukaryotic and prokaryotic microbes; algae, protists, fungi, bacteria, cyanobacteria. The viruses. Microbial anatomy — introductory biochemical of microbes. Methods of microbiology. Microbial growth and control of microbial growth, including sterilisation and disinfection.

SC542 **Practical Work**

Four hours of practical work per week for one semester

A subject of the graduate diploma course in industrial microbiology.

The practical work complements the theory and develops the skills of students in the handling of micro-organisms.

SC543 **Microbiology**

Three hours of theory per week for one semester

A subject of the graduate diploma course in industrial microbiology.

Identification of industrially imported microorganisms; microbial metabolism; fermentation technology; computer control of fermentations; waste treatment.

SC544 **Practical Work**

Four hours of practical work per week for one semester

A subject of the graduate diploma course in industrial microbiology.

The practical work complements the theory and develops the skills of students in the handling of micro-organisms.

SC545 **Microbiology**

Three hours of theory per week for one semester

A subject of the graduate diploma course in industrial microbiology.

Microbial genetics; molecular biology; basic immunology and methods of immunology; downstream processing; dairy technology.

SC546 **Practical Work**

Four hours of practical work per week for one semester

A subject of the graduate diploma course in industrial microbiology.

The practical work complements the theory and develops the skills of students in the handling of micro-organisms.

SC547 **Microbiology**

Three hours of theory per week for one semester

A subject of the graduate diploma course in industrial microbiology.

Industrial fermentations; biotechnology; food microbiology; microbial toxics; infection and immunity.

SC548 **Practical Work**

Four hours of practical work per week for one semester

A subject of the graduate diploma course in industrial microbiology.

The practical work complements the theory and develops the skills of students in the handling of micro-organisms.

SC550 **Environmental Chemistry**

Three hours of theory plus four hours of practical work per week

A fourth-year subject of the degree course in environmental health.

The course is divided into two major blocks:

1. Chemical analysis and the environment (ten weeks)

   - Pollutants: by industry (toxic wastes, types, quantities) agriculture and domestic sources.
   - Sampling: representative sampling, solids, water sampling methodologies, storage and labelling. Air sampling trains; EPA monitoring. Analysis: Spectroscopy; UV/Visible, IR, AA, AE including IC; Chromatography: GC, LC including IC and ion exchange. EPA air analysis. Volumetric; Electrochemical; potentiometric (pH and other ion sensitive electrodes). Polarography. ASV comparative sensitivities of techniques.

   Water quality: significance and interpretation of water test parameters.

2. Biological aspects (three weeks)

   - Biological indicators of pollution: nitrogen; phosphorus, carbon and sulphur cycles; vector control; integrated pest management; use of biological, ecological and chemical methods of control.

SC551 **Chemical Instrumentation**

Four hours of theory and practical work per week for one semester

A subject of the graduate diploma courses in biomedical or scientific instrumentation.

Topics to be covered will include:

- atomic absorption, infra-red and ultra-violet spectrophotometry; gas and liquid chromatography; mass spectrometry, NMR and ESR spectroscopy; X-ray techniques and associated equipment.

SC552 **Epidemiology**

Two hours per week for one semester

A fourth-year subject of the degree course in environmental health.

Legionnaires disease.

Exotic diseases in the Cholera, Malaria, Dysentery, Disease, Lassa fever, Melioidosis, Hepatitis A, B and non-A, B.

Virus infections: Food-borne illnesses — Shigella, Typhoid, Salmonella, Staphylococcal, Clostridial and Bacillus infections. AIDS, Control of such infections.

Mycobacterial infections — Tuberculosis and Leprosy. Immunosuppressive diseases to include Diphtheria, Tetanus, Measles, Rubella, Poliomyelitis, Whooping Cough, Adenovirus, including their control and particularly with reference to Australia.

Epidemiological screening and the health impact of refugees.

Sexually transmitted diseases — Gonorrhoea, Syphilis, Chlamidial infections, Herpes, AIDS, Menephritis — mosquito control.

SC553 **Applied Chemistry**

Seven hours per week in semester seven

(will run for the first time in 1992)

A fourth-year subject in the degree course in computer-aided chemistry.

**Applied Organic Chemistry**


**Immunological analysis:** Theoretical basis of immunological analysis as applied to organic chemistry.

Photochemistry: free radicals; colour sensitisation and quenching; optical pumping; photochemical reactions; industrial photochemistry.

**Polymer Chemistry**

Analysis and identification of polymers: differential thermal analysis; gel permeation chromatography; polymer applications: infra-red and NMR spectroscopy; pyrolysis gas chromatography.

Polymer coatings: applications of protective organic surface coatings; non-convertible and convertible surface coatings, their chemistry and properties.
Surface and Electrochemistry

Surface and colloid chemistry: surface 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: electrodes — extension of the Butler-Volmer equation to multistep electrode reactions; experimental methods — potentiostatic and galvanostatic electrolysis; mass transport control of electrode reactions — steady state and transient techniques. Convective mass transport: design of industrial electrochemical cells.

Corrosion.

Convective mass transport: design of industrial electrochemical cell.

Fourier transform NMR.

Industrial Chemistry

Four hours per week for one semester

A fourth-year subject of the degree course in computer-aided chemistry. An introduction to the theory of catalysis with emphasis on super acid catalyses, zeolites and processes used in the petroleum refining industry.

Control and treatment of industrial waste. The Environmental Protection Act and its administration. Other legislation. Types, source and effect of pollution of air, water and land will be discussed in relation to natural ecosystems and human health. Disposal of domestic and industrial wastes: sewage treatment systems including microbiological bases; physico-chemical and other methods. Hazardous and intractable wastes.

Process analysers: their use for process control.

Free energy relationships applied to metal extraction: thermodynamic basis of free energy relationships. Pyrometallurgical processes for the extraction of metals from their ores, explanation of various aspects of these processes in terms of free energy relationships.

SC564 Industrial Chemistry

SC565 Practical Biochemistry

Six hours per week in semester seven (will run for the first time in 1992)

A fourth-year subject in the degree course in computer-aided biochemistry.

Advanced experiments in protein analysis. Purification, fragmentation and separation of bacterial DNA. Techniques will include fluorescent spectroscopy, gel electrophoresis, iso-electric focussing. Computers will be used for some simulations, for data analysis and for modelling studies on structure-function-relationships of macromolecules, effects of modification of molecules and thermodynamic considerations in macromolecular structures. Isolation, cloning and sequencing of a gene.

SC570 Chemistry

Six hours per week in semester seven (will run for the first time in 1992)

A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Electrochemistry: fundamentals.

Liquid surfaces: surface chemistry and thermodynamics.


SC580 Practical Chemistry

Four hours per week in semester seven

A fourth-year subject in the degree course in computer-aided chemistry and biochemistry.

Selected experiments in electrochemistry and surface chemistry.

Qualitative and quantitative analysis of an unknown liquid mixture using distillation, chemical tests, physical measurements, an infra-red spectrometer, an NMR spectrometer, a mass spectrometer and a gas chromatograph.

Analysis of unknown solid using an X-ray diffractometer, analysis using an infra-red data station.

SC590 Computers in Chemistry

Three hours per week in semester seven (will run for the first time in 1992)

A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry.

Laboratory automation: autoanalysers in chemistry, with special reference to clinical laboratories. Computer control of instruments. Robots in the laboratory.

Laboratory information management systems (LIMS).

Software packages: spreadsheets for use in the chemical industry, or built systems and management programmes. Data base management. Communications systems.

Computer systems: hardware components (e.g. storage media, work stations). Connections to analog devices. The parallel connection. The serial connection (RS-232, modems, telecommunications, data bases, networks).

Software for the laboratory (operating systems, languages). High resolution — high speed graphics systems.
SC592 Applied Chemistry Practical
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry.
Selected experiments in electrochemistry and colloid chemistry. Further
analysis of solutions using Vis/UV-visible spectrophotometry. Further
analysis of unknown solutions using NMR spectrometry, NMR spectrometry
and UV-visible spectrophotometer.

SC593 Practical Biochemistry
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry.
A series of more advanced experiments including chain length and
sequence determination of a peptide, amino acid analysis using HFLC,
methods for the hydroyzation and disulfide bond analysis in proteins,
conformational analysis of proteins using circular dichroism and fluor-
oscence and by Edman and characterization isozymes, purification,
fragmentation and separation of DNA by DNA sequencing.
These experiments will involve the use of more sophisticated
methods including circular dichroism and circular dichroism.

SC594 Industrial Biochemistry
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry.
Applied and industrial microbiology: properties, growth characteristics,
methods of cell and life cycles of organisms ranging from viruses to filamentous fungi.
Micro-organisms as analytical tools. Statistical design of experiments.
Important microorganisms. Microbial genetics and gene manipulation: structures, inter-relationships
and functions of nucleic acids. Transcription and translation and relationships to RNA and protein synthesis. Genetic control mech-
anism. Mutations, mutagenic agents and selection of spontaneous
and induced variants. Genetic mechanisms involving microorganisms.
Recombinant mechanisms in bacterial microorganisms and industrial fermentation processes. Applied recombinant DNA tech-
nology. Recombination by protoplast fusion. Fermentation technology, chemical requirements for growth and
growth kinetics. Batch, fed-batch and continuous fermentations. Bioreactors and their design criteria. Aeration and oxygen transfer. Control of fermentation. Scale-up problems: qualitativeconsideration of factors and
problems involved in translating laboratory findings into pilot plant and finally production plant stages. Factors involved in scale-up include
environmental control factors, mixing relationships, power input, momentum factors, impeller speeds and volumetric mass transfer coefficient. Scale-up based on non-geometric similarity. Alteration of factors in optimising processes.

SC595 Biochemistry
Two hours per week for one semester
A fourth-year subject in the degree course in computer-aided biochemistry.
Control mechanisms in living cells. Mechanisms operating at the DNA
level — activation of genes, gene repression. Mechanisms of gene repression. Other factors influencing the rate of enzyme
synthesis. Mechanisms operating at the enzyme level — factors affecting
the activity of enzymes.
The role of coenzymes in increasing or decreasing the activities of
enzymes, and in regulation pathways. The integration of metabolism in mammals — the effects of over-eating,
starvation, exercise.

SC596 Analytical Biochemistry
Two hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry.
unification, homogeneity tests and quantitative analysis of proteins.
Determination of primary structure, proteins including ar
acid analysis, peptide bond analysis, peptide mapping, secondary structure
analysis, C-terminal and N-terminal analysis methods. Automated
Edman sequencing. Solid-phase synthesis of peptides. Determination
of secondary and tertiary structure of proteins, including electron micro-
scopy and computer imaging. Techniques of Molecular Biology: purification and quantitative analysis of
DNA and RNA. Fragmentation of DNA, restriction enzymes, methods for separating fragments of DNA/RNA including submarine gel electrophoresis, Southern and Northern blotting techniques, use of probes including oligonucleotides and CDNA probes, labelling methods. Techniques of DNA synthesis. Purification of DNA, CDNA synthesis. Construction and screening of CDNA and genomic
DNA libraries. Polymerase Chain Reaction method, cloning DNA into vectors including M13 DNA sequencing methods. Transfection of DNA
into mammalian cells. Expression of cloned genes. Transgenic animal experiments.

SC600 Environmental Health (4)
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health. I
hazard assessment: structure and function and hygiene. Self-piercing establishment hygiene and sterilisation.
requirements of tattooists and acupuncturists. Solid waste disposal: relevant regulations and nuisance problems. Swimming pools: inspection technique, using field testing equipment, compliance with regulations. Camping areas: caravan parks: inspection methods and study of relevant regulations. Applied pest control: rat infestation, cockroaches, mosquito and other
vector controls.

SC601 Chemical Instrumentation
Two hours per week for one semester
A fourth-year subject of the degree course in medical biophysics and
instrumentation. Practical experiments involving a selection from infra-red and ultra-
visible spectrometers, fluorometers, control potential and control-
current techniques, gas chromatography and liquid chromatography techniques; mass, NIR, and atomic
absorption spectrometers.

SC604 Biotechnology
Three hours per week in semester eight
A fourth-year subject in the degree course in computer-aided biochemistry. Microbial genetics. Industrial microbiology: growth characteristics, storage,
preservation of industrial microorganisms. Technology of industrial fermentation processes and downstream processing.

SC609 Health Education
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health. The course begins by reviewing key concepts and strategies in com-
unity 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:
(i) social, cultural and psychological factors involved in health prom-
o-vention and disease prevention, the Health-Belief Model;
(ii) health education, opportunities and responsibilities for health

(iii) health education strategies and techniques for health surveys;
(iv) instructional techniques and communication skills for health
education;
health education program design: needs, objectives, curricula, evaluation;
ethical issues in health education: responsibility, individual freedom, licensing, working with other professionals.

**SC610 Research Project**
Three hours per week for one semester
A fourth-year subject of the degree course in environmental health.
Students undertake a research project on an environmental health topic which can include science, engineering, law, administrative or social issues.

**SC649 Microbiology**
Three hours per week for one semester
A fourth-year subject of the degree in environmental health.
Immunisation methods of treatment and control of viral diseases.
Rickettsia and Chlamydia — characteristics of both groups of organisms.
The major diseases caused by these agents with reference to both Australia (リアチリス) and the wider world (Tiphus).

**SC650 Process Chemistry**
Five hours per week in semester eight
A fourth-year subject in the degree course in computer-aided chemistry.
Extraction of metals: free energy relationships applied to metal extraction; the of free energy relationships.
Pyrometallurgical processes for extraction of metals from ores. Explanation of various aspects of these processes in terms of free energy relationships.
Catalysis and selective chemical reactions used in the large-scale industrial production of organic chemicals, including the kinetics of heterogeneous reactions. The industrial use of biological catalysts — either in living cells or as extracted enzymes. Industrial fermentation. 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, and each group will prepare a talk and written report on a selected catalytic process. A visit to a suitable industrial process will be included.
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.

**SC654 Chemistry**
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.
The basic analyser: detector, amplifier, time constant and frequency response, signal-to-noise ratio and digital systems.
Heterocyclic chemistry: the principles of heterocyclic chemistry with particular emphasis given to compounds of medical and biological importance.
Macromolecular chemistry: basics; addition and condensation reactions; copolymers.
Current and advanced topics: e.g. current developments in applied organic chemistry.

**SC655 Chemistry Practical**
Three hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.
Analysis of food sample using an atomic absorption spectrometer with electrothermal atomisation, experiments using a polarimeter.

**SC656 Applied Chemistry**
Five hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry.
Chemistry of natural products: saccharides; steroids and terpenes and their uses in industry.

**SC659 Analytical Biochemistry**
Two hours per week in semester eight
A fourth-year subject in the degree course in computer-aided chemistry.
Further analysis of the unknown solid using an infra-red spectrometer, an NMR spectrometer and a U/Vise spectrometer. Further analysis using an infra-red data station. Project.

**SC660 Practical Chemistry**
Four hours per week in semester eight
A fourth-year subject in the degree course in computer-aided chemistry.

**SC661 Macromolecular Chemistry**
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry.

**SC662 Analytical Biochemistry**
Two hours per week in semester eight
A fourth-year subject in the degree course in computer-aided chemistry.
Techniques associated with molecular biology.

**SC663 Industrial Chemistry**
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry.

**SC664 Industrial Chemistry**
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry.

**SC665 Preclinical Biochemistry**
Four hours per week in semester eight
A fourth-year subject in the degree course in computer-aided biochemistry.

**SC670 Chemistry**
Four hours per week in semester eight
A fourth-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry.

**SC671 Organic Chemistry: Stereochemistry, Carbocations, Heterocyclics**
Current developments in applied organic chemistry.
SC680 Practical Chemistry
Four hours per week in semester eight
A fourth-year subject in the degree courses in computer-aided chemistry and computer-aided biochemistry. Analysis of an unknown solid using a spectrophotometer, analysis of a food sample using a atomic absorption spectrometer with electrothermal atomisation, experiments using an ion-sensor, a high-pressure liquid chromatograph and an infra-red data station.

SC689 Computers in Chemistry
Three hours per week in semester eight (will run for the first time in 1992)
A fourth-year subject in the degree course in computer-aided chemistry and computer-aided biochemistry. Laboratory data handling: extension of earlier topics with emphasis on advanced techniques (e.g. Fourier transforms) and instruments and packages used in the laboratory program. Applications in chemistry and biochemistry:
- expert systems (e.g. solvent selection in HPLC, spectral interpretation);
- chromatography;
- multivariate analysis;
- factor analysis;
- image processing;
- data files (e.g. files on X-ray diffraction data for proteins, sequence data on proteins and DNA, mass spectral data);
- protein structure and homology;
- protein engineering;
- microbial taxonomy;
- control of fermentations in industrial biochemistry.

SC690 Applied Chemistry Practical
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry. A project.

SC691 Practical Biochemistry
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry. This practical subject has 2 components:
(a) a series of set experiments designed to introduce the student to immunochemical methods including quantitative radial immunodiffusion, radioimmunoassay, counting procedures and radiation safety, ELISA, immunelectrophoresis and related techniques. Automation in the clinical laboratory including use of microprocessor-controlled auto-analysers, interpretation of results and quality control;
(b) research project: each student will complete a minor research project under the direct supervision of a member of staff. Project results will be presented in a class seminar at the end of the semester.

SC692 Mammalian Biochemistry
Two hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry. Endocrinology: roles mechanisms involved in the action of certain receptors,  

SC693 Current Topics
Two hours per week for one semester
A fourth-year subject of the degree course in computer-aided biochemistry. Analysis of the products of an organic synthesis using chemical tests, physical measurements, an infra-red spectrometer and a gas chromatograph.

SC694 Industrial Biochemistry
Three hours per week for one semester
A fourth-year subject of the degree course in biochemistry. Industrial fermentation in the production of chemicals; fermentations involving Saccharomyces cerevisiae in the production of alcohol, wines and beers. Descriptions to include processing of starting material, methods of fermentation, biochemical reactions and enzymes. Variation in patterns and titers of enzymes in aerobic and anaerobic fermentations. The effects of mutants and regrowth.

SC695 Analytical Chemistry
Two hours per week for one semester

SC696 Dispersion Forces and Thin Films
Two hours per week for one semester
A subject of the masters course in applied colloid science. Dispersion forces Interactions between atoms, leading to an overall generalisation for macroscopic interactions; deficiencies of the classical microscopic approach. Interaction energies calculated from electronic and spectral data: the triple line calculations: adsorbed layers. Applications of van der Waals' theory to contact angles, wetting, spreading and adhesion. Thin films Significance of thin films, Stability — concept of disjoining pressure: calculation of electrostatics, van der Waals' and steric components of: evidence pertaining to short range hydration and hydrophobic forces, based on experimental studies and statistical mechanical treatment of fluids at interfaces. Instability and rupture of thin films. Application to flotation, emulsions and the stability of froths and foams.
SC711  E.D.L., Steric and Polymer Theory
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Electrical double layer theory
Review of Gouy-Chapman-Stern-Grahame models including the concept of effective potential. Phenomenological electrolyte systems, electrokinetic phenomena from studies of the mercury-solution interface. Discussion of silver iodide dispersions and the development of models appropriate to oxides and polymer latexes. Adsorption of small ions at interfaces. Adsorption of simple surfactants at interfaces.

Steric stabilisation and polymer theory

SC712  Association and Colloid Rheology
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Association colloids

Rheology of colloidal systems

SC713  Colloid Interaction Theory
Two hours per week for one semester

A subject of the masters course in applied colloid science.

Interaction theory
Calculation of free energy of interaction for the cases of: constant charge, constant potential, charge regulation and hetero-coagulation: various geometries will be discussed. Experimental evidence dealing with the dynamics of interacting double layers. Kinetics of coagulation and stability ratio.

Concentrated dispersions
Fundamental considerations: radial distribution function, (g(r)); relation between g(r) and S(Q); potential of mean force and 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; calculation of equilibrium thermodynamics properties from g(r); exact and approximate techniques. Analysis of experimental systems — ordered/ordered phenomena.

c. Scattering of electromagnetic radiation
Extension of the classical time average theories of light scattering to photon and small angle neutron scattering and X-ray diffraction. Concepts of scattering density, parameter, particle form factor P(Q) and structure factor S(Q). Application to concentrated colloidal systems. (e.g., microemulsions; latexes and pigment dispersions. (Note: Q is the scattering vector.)

SC714  Research Project
A subject of the masters course in applied colloid science.

A research project will be undertaken which results in a minor thesis. This will be assessed by examiners external to the project and will comprise 50% of the overall assessment for the course. Selection of the project topic will follow detailed discussion between each candidate and supervisor. The project will run for the duration of the course.

SC720  Applied Chemical Techniques
Four hours per week of lectures and assignment work.

A subject in the graduate diploma in industrial chemistry. A selection of topics from the following: Chromatography, GC and HPLC. Spectroscopy: IR, UV/Visible, atomic and NMR. Mass spectrometry and X-ray methods. Electrochemistry: Liquid surfaces. Chemical and automatic analysers. Chemical data processing: software packages, data stations, laboratory automation.

SC721  Properties of Colloids and Interfaces
Four hours per week of lectures/tutorials.

A subject in the graduate diploma in industrial chemistry. A subject in the graduate diploma in industrial chemistry.

Food processing
Introduction to processes used in the food industries for the preparation and processing of foods. Problems or potential problems associated with those processes that have implications for community health.

Food chemistry
Techniques used in the determination of the amounts of carbohydrates, protein and lipid in foods. Determination of the amounts of micronutrients in foods. Methods used for determining the water content of foods. Determination of the calorie or joule contents of foods. Other manual and instrumental techniques used in food analysis (e.g. determination of sulphur dioxide, pesticide residues, etc.). Palatability and digestibility of foods. Chemical stability of foods. Chemical additives to food will be considered under the following headings: chemical classes of food additives, historical aspects, permitted compounds, reasons for use, function, advantages, disadvantages, breakdown pathways, toxicity testing regulation controlling use. Classes of chemical additives include: colourings, preserving agents, flavour enhancers, nutrients, emulsifiers, stabilisers.

SC723  Industrial Chemistry
Four hours per week of lectures/tutorials/assignments.

A subject in the graduate diploma in industrial chemistry.

Introduction to chemical processing
Flow diagrams, fluid flow, heat transfer, equilibrium constant, mass balance, energy balance, separation processes, process analysis, process control, example case study.

Treatment of industrial wastes
Control and treatment of industrial wastes. 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. Students will also work in groups and each group will prepare a talk and written report on a selected process. A visit to a suitable industrial process will be included.
SC724 Polymer Chemistry
Four hours per week of lectures (applied chemistry stream).
A subject in the graduate diploma in industrial chemistry.

Principles of macromolecular chemistry
- Practical polymer chemistry.

SC725 Practical Chemistry
Eight hours per week of practical work (applied chemistry stream).
Four hours per week of practical work (biochemistry stream).
A subject in the graduate diploma in industrial chemistry.

A selection of experiments and projects in the areas covered in the following theory topics:
- Applied chemistry techniques
- Colloids
- Food chemistry

SC726 Advanced Biochemistry
Two hours per week of lectures (applied chemistry stream).
A subject in the graduate diploma in industrial chemistry.

Endocrinology: molecular mechanisms involved in the action of certain hormones — hormone receptors, cellular responses to hormone binding.
Acid-base balance and fluid balance: chemical aspects of renal function and respiration, factors affecting the pH of body fluids, causes of and responses to acidosis and alkalosis, regulation of body pH. Factors leading to dehydration, excessive retention of fluid. Maintenance of fluid balance.
Clinical chemistry: the role of chemical analysis in the diagnosis and treatment of diseases. The organisation of clinical laboratories, automation and quality control.
Muscle biochemistry: the components of muscle and how they function.

SC727 Biochemical Techniques
Two hours per week of lectures (applied chemistry stream).
A subject in the graduate diploma in industrial chemistry.

Protein chemistry
- Determination of secondary and tertiary structure. Use of antibodies and other chemical probes for determination of surface structure.

Techniques of molecular biology

SC728 Industrial Biochemistry
Two hours per week of lectures (applied chemistry stream).
A subject in the graduate diploma in industrial chemistry.

Yeast and fungal fermentations and their controls
- Aerobic and anaerobic fermentation patterns in the production of baker's yeast, alcohol, wines and beer. Pasteur effect and catabolite repression. Differences in penicillin and cephalosporin production.
- Industrial and immobilised enzymes
- Scale-up problems from a pilot scale: Qualitative consideration of factors involved in scale-up operations. Environmental control, mixing relationships, power, momentum, impeller speed, volumetric mass transfer coefficient, oxygen supply, and bubble size. Scale-up based on geometric similarity. Alteration of factors in optimising processes.

SC729 Industrial Microbiology
Four hours per week of lectures and practical work.
A subject in the graduate diploma in industrial chemistry.

Microbial growth and metabolism
- Kinetics of microbial growth.
- Measurement of microbial growth.
- Fermentation dynamics.
- Use of computers in control of fermenter operation.
- Biochemistry of micro-organisms: metabolism — catabolic and anabolic metabolism; DNA and protein synthesis.
- Metabolic control.

Microbial genetics and biotechnology
- Genetics of prokaryotic micro-organisms.
- Genetics of eukaryotic micro-organisms.
- Plasmids.
- Viral genetics.
- Lytic cycle and lysogenic cycle in viruses.
- Mutations and mutagenesis.
- Genetic engineering: recombinant DNA technology; principles, applications and implications; containment requirements.

Microbiology
- Microbial nutrition.
- Nutritional categories of micro-organisms: heterotrophs and autotrophs.
- Microorganisms and minerals recovery.
- Micro-organisms and products of industrial importance.

SC730 Microbiology
Two hours per week of lectures and practical work.
A subject in the graduate diploma in industrial chemistry.

Introduction
Survey of the characteristics of micro-organisms: eukaryotic and prokaryotic micro-organisms; viruses.
Methods of studying micro-organisms: staining techniques, basic microscopy, etc.
- Microbial nutrition.
- Nutritional categories of micro-organisms: heterotrophs and autotrophs.
- Microbial media.

Microbial anatomy and physiology
- Detailed anatomy of bacterial cells.
- Basic biochemistry of micro-organisms.
- Microbial growth — an introduction.

Control of microbial growth
- Sterilisation methods.
- Efficiency testing.
- Sampling techniques in quality control. Antiseptics and disinfectants. Antibiotics and chemotherapeutic agents.

Microbial taxonomy
- Classification, identification and nomenclature.
- Principles of microbial taxonomy.
- Concept of the species.

Methods of identifying microorganisms.
- Methods of identifying microorganisms.
- Microorganisms of industrial significance: micro-organisms.

Feasibility testing.
SC731  Practical Biochemistry  
Four hours per week of practical work
A subject in the graduate diploma in industrial chemistry.
The practical work will cover a range of laboratory exercises and will include a research project.
Typical laboratory experiments are listed below:
Polyepipeptide chain length, amino acid composition, sequence.
Disulphide and sulphydryl groups in proteins.
Conformational analysis of proteins.
Fluorescence spectroscopy.
Separation/purification techniques.
DNA: preparation, fragmentation, sequencing.
Disulphide and sulphydryl groups in proteins.
Typical projects are listed below:
Analysis of pesticides in food.
Characterisation of antigens.
Preparation of antibody-enzyme conjugates.
Immunoelectrophoretic analysis of seed proteins.
Sequencing part of a gene.
Photobiotin labelling of DNA.

SK104  Computer Science 1  
Five hours per week for one semester
A first-year subject of the degree course in computing.

SK105  Computer Science 1B  
Three hours per week for one semester
A first-year subject of the degree course in computer science and mathematics and computer science.
Mainframe architecture: components of a mainframe computer system; mainframe user interfaces.
Computer packages: SAS, MINITAB.
Computer tools: word processors, spreadsheets.
Numerical analysis: an introduction to numerical programming techniques — simple iterative techniques and direct methods.

SK106  Computer Science 1  
Five hours per week for one semester
A first-year subject of the degree course in medical biophysics and instrumentation.
Computer organisation: hardware configuration; operating systems; machine and assembly language programming; systems software.
Programming methodology and ADA: specifications; problem solving.

SK149  Software Practice 1  
Six hours per week in semester one, followed by four hours per week in semester two
A first-year subject of the degree course in computer science.
This subject builds skills in team problem solving by studying the following topics: situation and resource analysis, Problem solving strategies, Documentation and presentation, Interpersonal communication, Group dynamics. Critical evaluation and reflection.

SK190  Computer Science 1 (Chemistry)  
Five hours per week for one semester
A first-year subject of the degree courses in computer-aided chemistry and biochemistry.
Programming in BASIC
A comprehensive study of a reasonably advanced version of BASIC (example Turbo BASIC) including array and file handling. Problem solving skills.
General Computer Technology
Computer concepts such as means of data representation, assemblers, compilers, operating systems. Elementary computer hardware.

SK204  Computer Science 2  
Eight hours per week for one semester
Prerequisite: SK104
A first-year subject of the degree course in computing.
Advanced Programming: dynamic data structures; packages; abstract data types; generics; IO models; exception handling.
Introduction to Database: data structures for database applications; relational databases — normalisation; SQL; introduction to database design.
Format Specifications and Logic: set theory; propositional and predicate calculus; use of mathematics to specify programs; the Z specification language.

SK210  Applied Computing Methods  
Two hours per week for one semester
A first-year subject of the degree course in environmental health.
Software tools: an introduction to the main software tools encountered by environmental health specialists: job command languages, editors, word processors, spreadsheets, etc.
Programming: an introduction to programming languages. 
C programming: an introduction to programming in the C language.

SK324  Computer Science 3  
Eight hours per week for one semester
Prerequisite: SK204
A second-year subject of the degree course in computing and instrumentation.
UNIX: an introduction to the UNIX operating system, its structure, commands, shell programming.
C programming: an introduction to programming in the C language.
Data Structures and Algorithms: this unit pursues the goals of good programming (correctness, flexibility, adaptability, portability, utility and clarity) through the concepts of modularity and abstract data types.

SK334  Computer Science 3  
Eight hours per week for one semester
Prerequisite: SK204
A second-year subject of the degree course in mathematics and computer science.
UNIX: an introduction to the UNIX operating system, its structure, commands, shell programming.
C programming: an introduction to programming in the C language.
Data Structures and Algorithms: this unit pursues the goals of good programming (correctness, flexibility, adaptability, portability, utility and clarity) through the concepts of modularity and abstract data types.
SK347  Software Engineering 1
Eight hours per week for one semester
A second-year subject of the degree course in computer science.
Systems Analysis: conventional structured systems analysis; Lancaster Soft Systems Methodology.
Human-Computer Interface: human factors of interactive software; interactive devices: pointing devices, speech recognision, digitisation and generation.

SK349  Software Practice 2
Eight hours per week for two semesters
A second-year subject of the degree course in computer science. This unit consists of lectures and tutorials on project management, with laboratory sessions spent on a team based software project.

SK424*  Computer Science 4
Nine hours per week for one semester
Prerequisite, SK324 Computer Science 3
A second or third year subject of the degree course in computer science. The course includes:
Software Engineering 1: a study of the software life cycle; software development environments; system and program design.
Computer Architecture 1: this unit covers methods of computer design used to increase performance, such as cache memory systems, bus organisation and various CPU implementation methods. It includes an examination of basic computer components available on the market.

SK434*  Computer Science 4
Nine hours per week for one semester
Prerequisite, SK334 Computer Science 3
A second or third year subject of the degree course in mathematics and computer science. The course includes:
Software Engineering 1: a study of the software life cycle; software development environments; system and program design.
Computer Architecture 3: a study is made of 32-bit micro-computer based systems. It provides an in-depth examination of typical 32-bit microprocessors and examines the factors in designing systems using such processors.

SK444  Computer Science 4
Six hours per week for one semester
A second-year subject of the degree course in computer science. Artificial Intelligence: a selection from the following topics: knowledge representation, natural language processing, problem solving and game playing; search, planning, goal manipulation. Rule-Based reasoning; production systems and expert systems. Knowledge processing aspects of robotics: vision and other sensors, manipulation and locomotion, reasoning about space, object interactions, time. Machine learning and self-modifying systems.

SK447  Software Engineering 2
Ten hours per week for one semester
A second-year subject of the degree course in computer science. Software Engineering 1: the software life cycle; software development environments; designing software architecture; software specification documentation; CASE tools.

SK504  Computer Science 5
Nine hours per week for one semester
Prerequisite, SK424 Computer Science 4
A fourth-year subject of the degree course for students majoring in computing.
Students continue to study one of the following three streams, corresponding to the one studied in SK404:

1. Software Technology
   Translator Engineering: an introduction to translation: Introduction to formal language theory, finite automata, lexical analysis, and the parsing problem.
   Software Engineering 2: further study of the software life cycle centering on project management, formal specifications and design techniques, maintenance and quality control techniques.
   Computer Graphics 1: an introduction to computer graphics is given in this unit, including graphics devices, data structures for graphics, algorithms for manipulating two-dimensional graphics images, and interactive computer graphics program design.
   Operating Systems 2: this unit comprises an in-depth study of one or more operating systems such as UNIX. The objective is to investigate the structure of real operating systems and the effect the structure has on programming in the operating systems environment.

2. Computer Systems Technology
   Performance Evaluation: this unit comprises a study of the techniques available to predict the performance characteristics of computer systems, communication networks and related systems.
   Computer Architecture 3: a study is made of 32-bit micro-computer based systems in this unit. It provides an in-depth examination of typical 32-bit microprocessors and examines the factors in designing systems using such processors.
   Operating Systems 2: this unit makes an in-depth study of one or more operating systems such as UNIX. The objective is to investigate the structure of real operating systems and the effect the structure has on programming in the operating systems environment.

3. Information Technology
   Database 2: this unit comprises a study of advanced database techniques, non-relational systems, and mainframe database products.
   Expert Systems 1: this unit covers the programming aspects of expert systems; such as shell design and implementation, control strategies, statistics in expert systems, user communication with expert systems and automatic knowledge acquisition.
   Artificial Intelligence 3: a selection from the topics from the basis of contemporary artificial intelligence, such as knowledge representation, reasoning systems, search in AI, memory organisation and indexing, vision systems, and language understanding.
   AdaAPSE: a study of the AdaAPSE programming system as a vehicle for understanding the concepts of software engineering such as data abstraction, modularity, top-down design, object-oriented design methodology, as well as studying the features of an important new language in the context of its application area of embedded systems.
SK531 Computer Programming Techniques
Sixty hours in one semester
Prerequisite, the student is expected to be competent in the use of some programming language to implement simple and non-numerical problems.
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.
This subject involves the study of:
1. modern concepts of program design using a language such as Fortran.
2. the implementation of programs using FORTRAN at an advanced level.
3. the characteristics of the software required to support instrumentation interfaces.
One half of the time is allocated to lectures or tutorials, the other half is devoted to practical work, which is an integral part of the course.

SK534 Computer Science 4
Nine hours per week for one semester
Prerequisite, SK534 Computer Science 4
A fourth-year subject of the degree course in mathematics and computer science.
Software Engineering 2: further study of the software life cycle centering on project management, formal specifications and design techniques, maintenance and quality control techniques.
Computer Graphics 1; an introduction to computer graphics is given in this unit, including graphics devices, data structures for graphics, algorithms for manipulating two-dimensional graphics images, and interactive computer graphics program design.
Translator Engineering: an introduction to translation: introduction to formal language theory, finite automata, lexical analysis, and the parsing problem.
Human-computer interface: interactive devices — pointing devices, speech recognition, digitisation and generation; theories, principles and guidelines of the human-computer interface; presentation and navigation of information systems; database systems and map-based systems.

SK544 Computer Science 5
Eight hours per week for one semester
A fourth-year subject of the degree course in computer science.
Computer Organisation: CPU components; CPU implementation; Interaction between the CPU and memory systems; Microcode programming; Bus organisation.
Computer Graphics 1 (CG1): hardware for computer graphics; Basic 2-D graphics drawing; transformations; Data structures for graphics; Windowing and Clipping.
Translator Engineering (TE): introduction to formal language theory: generative languages and grammars; finite deterministic and non-deterministic automata; Lexical analysis. Top-down parsing. Bottom-up parsing.

SK547 Software Engineering 3
Four hours per week for one semester
A fourth-year subject of the degree course in computer science.
Software Engineering 2: programming environments, CASE tools.
Computing the Human Context: an exploration of social and organisational issues and their relationship with the computing professional.

SK549 Software Practice 3
Eight hours per week for semester seven, followed by ten hours per week semester eight
A fourth-year subject of the degree course in computer science. Application of problem-solving methods to large projects.
Application of technical skills and knowledge to the construction of a relatively large information system.
Documentation and evaluation of the impact of information systems on organisations.

SK601 Trends in Computing
Thirty hours in one semester
Assessment is by tests and assignments
A fourth-year subject of the degree course for students majoring in medical biophysics and instrumentation.
A study of some of the recent developments in the application of computer science to the software/hardware interface. Topics will be selected from the current literature and will include selections from secure data communications and data encryption, software tools supporting electronic circuit design such as silicon compilers, graphical schematic data capture, circuit simulation, the programming of programmable logic arrays and of parallel computers.

SK604 Computer Science 6
Eight hours per week for one week
Prerequisite, SK604
A fourth-year subject of the degree course for students majoring in computing.
Students continue to study one of the following three streams, corresponding to the one studied in SK604.

1. Software Technology
Translator Engineering 2: this unit considers the practical aspects of compiler writing; the use of compiler compilers (such as LEX and YACC). Symbol tables, Code generation and optimisation.
Theory of Computation: two broad areas of theoretical computer science are covered in this unit, namely, the classical topics of computability and complexity theory, and the modern branch of the Theory of Computation centering on the verification of program correctness.
Computer Graphics 2: this unit covers graphics techniques for the display of three-dimensional objects. Topics include ray-tracing, lighting effects and transparency of objects.
Systems Programming: this unit examines the software appropriate to systems programming as distinguished from applications software such as UNIX, as distinguished from applications software such as MS-DOS. Examples include file and directory management, security and user management. Case studies are drawn from a particular operating system such as UNIX where it is possible for students to access the source code and alter parameters of the operating system.

2. Computer Systems Technology
Real Time Systems: a study of the techniques and structure of real time systems is made in this unit. Examples of real time systems include transaction processing systems, operating systems and the real-time control and monitoring of processes.
Computer Architecture 4: in this unit a discussion is made of advanced computer architectures such as data flow, array processors etc. The unit also covers factors in the design of computer hardware additional to those covered in Computer Architecture 3.
Database Technology: a broad study of database systems is made in this unit, including relational, hierarchical and network models, data definition, manipulation and retrieval methods, and the use of a commercial DBMS product.
Communications 2: this unit builds on the communications 1 unit, that is concerned with communication and software/hardware interfaces.

3. Information Technology
Expert Systems 2: the unit covers the theories and issues and issues of knowledge acquisition, generally referred to as knowledge engineering. A significant practical project is undertaken as an integral part of this unit.
Theory of Computation: two broad areas of theoretical computer science are covered in this unit. The classical topics of computability and complexity theory and the modern branch of the Theory of Computation centering on the verification of program correctness.
Artificial Intelligence 2: this unit examines an advanced level of some of the contemporary A1 topics such as Plan generation, language comprehension and learning. Student projects are related to these topics.
Knowledge and reasoning: this unit is concerned with current theories of knowledge and their philosophical and psychological basis and methods and their applications to computer science. Topics include the philosophy of language, epistemology, meaning, memory and perception.
SK624 Computer Science 6
Eight hours per week for one semester
Prerequisite, SK524 Computer Science 5
A fourth-year subject of the degree course in computing and instrumentation.

Computer Architecture: Advanced computer architectures such as dataflow and array processors; factors in the design of computer hardware systems.

Computer Graphics 2: techniques for the display of two-dimensional objects; ray-tracing; lighting effects and transparency.

Operating Systems: process management; interprocess communication; semaphores; memory sharing; virtual memory systems; scheduling; case study; UNIX.

*SK634 Computer Science 6
Eight hours per week for semester
Prerequisite, SK534 Computer Science 3
A fourth-year subject of the degree course in mathematics and computer science.

Communications: distributed computer systems; the electrical interference; data link controls; terminal-based networks; computer networks; local area networks; OSI connection. Computer security; error control; secure data exchange; introduction to cryptography.

SK644 Computer Science 6
Three hours per week for one semester
A fourth-year subject of the degree course in computer science.

Communications: computer communications; distributed computer systems; the electrical interference; data link controls; terminal-based networks; local area networks; computer networks; OSI connection. Computer security; error control; secure data exchange; introduction to cryptography.

SK646 Computer Science Options
Seven hours per week for one semester
A fourth-year subject of the degree course in computer science.

Computer Graphics 2: basic 3D graphics drawing; Projections; Colour Theory; Lighting Models; Ray-Tracing; Radiosity; Data representation; Animation.

or

Artificial Intelligence 2: a selection from: connectionism and neural networks; knowledge representation; natural language processing; problem solving and game playing; search, planning, goal manipulation; rule-based reasoning; production systems and expert systems; knowledge processing aspects of robotics; vision and other sensors; manipulation and locomotion; reasoning about space, object interactions, time, machine learning and self-modifying systems.

SK701 Imperative Programming
Fifty-six hours in one semester
Assessment is by assignments and examination
A subject of the graduate diploma of applied science (computer science).

A study of one or more programming languages and the related software practice. The level of languages will include Pascal, Modula-2, Ada, or some other suitable language. The course will be covered together with structured programming methods. A study of formal logic and its uses in problem solving will be undertaken. Students will receive instruction in the use of software tools such as word processors, which will be of general use to them during the course.

* Code subject to approval.

SK702 Selections from Computer Science
Fifty-six hours in one semester
A subject of the graduate diploma of applied science (computer science).

This unit introduces students to the current trends in computer science. It is designed to be useful as a bridging unit or to allow more experienced students to explore areas of computer science which they have not covered in their undergraduate courses. Topics will be selected from the following list:

1. Functional Programming
2. Artificial Intelligence
3. Computer Communications
4. Secure Data Exchange
5. Computer Architecture

SK703 Database Design and Implementation
Fifty-six hours in one semester
A subject of the graduate diploma of applied science (computer science).

A study of database design methods, internal storage management, mapping from the conceptual to the physical domain, query languages. A study in depth of a number of current database management systems for small to large scale applications will be made.

SK704 Software Engineering
Fifty-six hours in one semester
A subject of the graduate diploma of applied science (computer science).

A study of the problems confronting the software engineer in the development of modern computer software.

Software development route and its impact on large software projects.

Using the Unix toolkit for software systems development.

The Ada/APS system.

Common data structures and algorithms and their applications.

SK705 Systems Programming
Fifty-six hours in one semester
A subject of the graduate diploma of applied science (computer science).

Introduction to the C programming language and UNIX operating system. Language overview, pre-processor commands, UNIX system interface and standard libraries. An overview of operating systems, Shell programming basics, error and interrupt handling, environment inheritance and differences between the Bourne, Korn and C shells.

SK706 Introduction to Artificial Intelligence
Fifty-six hours in one semester
A subject of the graduate diploma of applied science (computer science).

The course will consider the central problems in the field of artificial intelligence and the concepts, tools and techniques used to solve them. Topics will be chosen from the following list:

* programming for artificial intelligence — a language such as PROLOG or LISP;
* knowledge representation;
* solving problems by decomposition, search etc.;
* control of the solving algorithms;
* logical inference.

SK712 Software Development Project
Fifty-six hours per semester for two semesters
A subject of the graduate diploma of applied science (computer science).

The student’s major project will be started as early as possible in the course and will be on an approved topic, preferably industrially based.

A series of lectures on software project management techniques will be given. The project will be completed in semester four and presented to the class and the assessment panel.
SK720 Computer Science
Fifty-six hours in one semester.
A subject of the master of information technology.

Introduction to computers
Hardware components — keyboard, screen, disk drives, printers.
Number codes — binary, hexadecimal, ASCII.
Internal structure — CPU, memory, input/output.
Software — systems (operating systems, languages, translators, editors), applications.

Fundamentals of computer science
Concepts of problem solving and algorithms, data representation, structured programming techniques, computer architecture and data structures. The application of these concepts and structures to the solving of common scientific and technological problems.

Computer programming
Programs in BASIC and STRUCTURED BASIC, or other suitable language.

SK801 Philosophical Aspects of AI
Fifty-six hours in one semester.
A subject of the master of information technology.
Philosophical aspects of intelligent activity; a selection from the areas of: mind and brain; theory and observation; explanation; meaning and truth; heuristics and reasoning; learning and concept formation and the problems of thinking.

SK802 Expert Systems Programming
Fifty-six hours in one semester.
A subject of the master of information technology.
Construction of shells; available tools; efficiency considerations.

SK803 Database Technology
Fifty-six hours in one semester.
A subject of the master of information technology.
Semantic databases; data models: E-R, RM/T; deductive databases; knowledge based databases, discourse understanding, natural language semantics.

SK804 Analysis of Computer Systems Performance
Fifty-six hours in one semester.
A subject of the master of information technology.
Application of Markov process theory to performance models; simulation models; benchmarking and synthetic loading; hardware and software monitors; Petri nets; dataflow diagrams; real time control; commercially available performance monitors.

SK805 Advanced Software Engineering
Fifty-six hours in one semester.
A subject of the master of information technology.

SK806 Machine Learning
Fifty-six hours in one semester.
A subject of the master of information technology.

SK807 System Analysis and Design Methodology
Fifty-six hours in one semester.
A subject of the master of information technology.

SK812 Project and Thesis
One hundred and twelve hours in one semester.
A subject of the master of information technology.
Students will devote the final two semesters of the course to a major research unit.

SM108 Mathematical Methods
Five hours per week for one semester.
A first-year subject of the degree course in computer-aided chemistry.


Vectors
Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Plane Analytic geometry
Co-ordinate 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.

Numerical methods

Vectors
Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Plane Analytic geometry
Co-ordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power, functions and of conic sections.

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Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation.

Numerical methods

Vectors
Vectors in 2 and 3 dimensions. Dot and cross products of 2 vectors in space and applications.

Plane Analytic geometry
Co-ordinate 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.
SM126  Applied Statistics 1
Two hours per week for one semester
Assessment by tests, examination and assignments
A first-year subject of the degree course in mathematics and computer science.

Data analysis
Numerical and graphical methods for summarising and presenting data using various methods including frequency tables, stem-and-leaf diagrams, box-and-whisker plots; measures of location and dispersion. Measures of Association for two variables; correlation coefficients, scatterplots.

Introduction to probability
Definition and calculation of probabilities using the addition and product rules; conditional probability, independent events. Random variables and expected values. Discrete probability distributions: uniform, geometric, binomial and hypergeometric.

SM127  Mathematics 1
Five hours per week for one semester
Assessment by tests, examination and assignments
A first-year subject of the degree course in mathematics and computer science.

Numerical calculations
Simple calculations, including mathematics of finance (interest; annuities, net present value; internal rate of return). Introduction to numerical methods. Errors and their propagation. Numerical solution of equations by iterative methods.

Plane analytic geometry
Co-ordinate geometry in Cartesian co-ordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

Functions of one variable
Standard functions and their graphs. Finite and infinite limits; continuity.

Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation. Applications of differentiation: graph sketching; related rates; optimisation; differentials and approximations; Taylor polynomials; L'Hopital's rule. Integration: definite and indefinite integrals and their interpretations; integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions. Numerical integration. Applications of integration: areas, volumes, lengths of curves and surface areas of revolution; integrals of rates of change; moments.

SM210  Mathematical Methods
Three hours per week for one semester
Assessment by tests, examination and assignments

SM214  Mathematical Methods
Four hours per week for one semester
Prerequisite: SM108
Assessment by tests, examination and assignments
A first-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.

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.

SM215  Mathematical Methods
Four hours per week for one semester
Prerequisite: SM108
Assessment by tests, examination and assignments
A first-year subject of the degree course in medical biophysics and instrumentation.

2D polar co-ordinates
Definitions: graph of equations; transformation to and from Cartesian co-ordinates.

Complex numbers
Definition and arithmetic: polar form; de Moivre's theorem and exponential notation.

Ordinary differential equations

Vector functions
Calculus of vector functions of one variable with application to displacement, velocity and acceleration and to mechanics. Equations to lines and planes, gradient of a scalar field, directional derivative.

Functions of many variables.
Partial differentiation and applications: differentials and approximations; optimisation and applications (including least squares) with first and second derivative tests.

Data presentation and analysis
Frequency distribution: tabulation and graphical presentation; measures of central tendency and of dispersion. Hypothesis tests and confidence intervals for means and correlation coefficients using the t distribution.

SM219  Mathematical Methods
Four hours per week for one semester
Prerequisite: SM108
Assessment by tests, examination and assignments
A first-year subject of the degree course in computing and instrumentation.

2D polar co-ordinates
Definitions: graphs of equations; transformation to and from Cartesian co-ordinates.

Complex numbers
Definition and arithmetic: polar form; de Moivre's theorem and exponential notation.

Ordinary differential equations
Functions of many variables
Partial differentiation: applications; differentials and approximations, optimisation and applications (including least squares) with first and second derivative tests.

Vector functions
Calculus of vector functions of one variable with applications to displacement, velocity and acceleration and to the gradient of a scalar field.

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 variables, including binomial, Poisson and hypergeometric distributions; continuous variables, including normal distribution; mean and variance.

SM225 Operations Research 2
Three hours per week for one semester
Prequisite: SM127
Assessment by examination, assignments and oral presentation

A first-year subject of the degree course in mathematics and computer science.

Methodology
Development of Operations Research, interdisciplinary team; in-house OR teams; consultancy teams; methodology, role of techniques; application problems; problem formulation; model building; testing; validating; design and data problems; implementation; OR literature; OR society.

Introduction to linear programming
Formulation of linear programming problems: graphical solution of two variable problems; sensitivity analysis; transportation problems; assignment problems. Use of computer packages such as SAS/OR.

Inventory control
Inventory systems: economic order quantity; quantity discount; safety stock under uncertainty.

SM226 Applied Statistics 2
Two hours per week for one semester
Assessment by tests, examination and assignments

A first-year subject of the degree course in mathematics and computer science.

Statistical inference
Drawing random samples from finite and infinite populations. The sampling distributions of sample means and sample variance including exponential and normal: expected values of continuous random variables; applications.

SM227 Mathematics 2
Three hours per week for one semester
Prequisite: SM127
Assessment by test/examination and assignments

A first-year subject of the degree course in mathematics and computer science.

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 co-ordinates
Definitions: graphs of equations; transformation to and from Cartesian co-ordinates; curve length and area.

SM304 Industrial Case Studies
Two hours per week for one semester
Assessment by assignments and oral presentations

A second-year subject of the degree course in mathematics and computer science.

This subject enables the student to appreciate the problems relating to industrial practice through case studies (both individual and group). A study of the organisation and structure of a company, relevant literature and case studies by invited speakers from industry. Further, additional materials relevant to work experience (such as accounting, economics and data processing) by experts within the institute. Students also gain experience in job applications and job interview techniques.

SM315 Mathematical Methods
Four hours per week for one semester
Prequisite: SM215
Assessment by test/examination and assignments

A second-year subject of the degree course in medical biophysics and instrumentation.

Linear algebra and vectors
Matrices and matrix algebra. Systems of linear equations: Gaussian elimination; procedures for numerical solution by direct and iterative methods (Jacobi and Gauss-Seidel), transformation matrices.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Space curves, Serret-Frenet formulae. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field.

Faculty of Applied Science
SM319 Mathematical Methods

A second-year subject of the degree course in computing and instrumentation.

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.

SM325 Operations Research 3

A second-year subject of the degree course in mathematics and computer science.

Network analysis
Introduction: history; areas of application; network construction; event time analysis; activity-time analysis; slack, floats, cost analysis; monitoring and control; resource allocation; alternative forms of networks; problems of data collection; practical applications.

Simulation
General philosophy: model construction; generation of random variables; validation of model; output; sensitivity analysis; variance reduction techniques; application of simulation to different models such as queuing, inventory.

Forecasting
Role of forecasting in decision-making; forecasting techniques; selecting the forecasting techniques; smoothing techniques; simple moving average; exponential smoothing; higher forms of smoothing; seasonal exponential smoothing; causal methods; forecasting with adaptive filtering; decomposition method of time series forecasting.

Case studies
The students working in groups tackle an unstructured problem related to a practical situation. Some previous examples are: estimating the return on investment in stamps for a client; advising a customer who wishes to invest 1 million dollars in a brewery; giving advice on the exploitation of volcanic energy; advising a production manager on the introduction of new machines. An oral preliminary report on the progress of their solution is expected. Before the end of the semester both oral and written reports on their proposed solution are presented.

SM326 Applied Statistics 3

A second-year subject of the degree course in mathematics and computer science.

Statistical inference
Hypothesis testing and estimation; type I and type II errors and the power of an hypothesis test. The F-distribution and applications. Contingency tables and goodness-of-fit tests.

Regression and correlation
Linear regression for both linear and non-linear equations. Model assumptions and how to check them. The method of least squares. Parameter estimation and confidence intervals for both. Applications to scientific and economic data.

Correlation and partial correlation, including tests of significance. The MINITAB package will be used extensively in this subject.

SM327 Mathematics 3

A second-year subject of the degree course in mathematics and computer science.

Ordinary differential equations

Complex numbers
Definitions and arithmetic; polar forms; solution of polynomial equations.

Linear algebra
Linear dependence of vectors; vector spaces, subspaces and bases; inner product. Matrices; rank, eigenvalues and eigenvectors; similarity of simple matrices; real symmetric matrices; applications including quadratic forms.

Combinatorial analysis
Systematic techniques of listing and counting for arrangements, selections, partitions, etc.

Functions of many variables
Multiple integrals evaluation and transformation; applications to volumes, moments, area, surface areas. Vector fields: line and surface integrals; vector calculus.

Algebraic methods
Introduction to algebra. Galois fields. Applications to self-correcting codes.

SM404 Project Management A

A second-year subject of the degree course in mathematics and computer science.

Applied research/project management
Project characteristics: project stages; project management and the project leader; responsibilities of the project leader; project planning; determination of tasks; scheduling tasks; development of project plan; monitoring and control of project; benefits of project management; when to use project management; senior management's responsibilities; the project leader and the project team. Guest speakers and management games may be used.

Work experience seminars
Each student will conduct a seminar on their recently completed year of work experience.

Internal project
Students, working in groups of 3 or 4, will be required to undertake a project for a member of staff. Each group will be totally responsible for managing the project and for bringing it to a successful conclusion. They will be expected to maintain diaries, etc., and to provide each member of staff with suitable progress reports. In addition, they will be expected to obtain formal approval for the work that they are undertaking. Senior management's responsibilities, the project leader and the project team. Guest speakers and management games may be used.

SM415 Mathematical Methods

A second-year subject of the degree course in medical biophysics and instrumentation.

Complex analysis

Random processes
SM419 Mathematical Methods
Three hours per week for one semester
A second-year subject of the degree course in computing and instrumentation.

Modern algebra with applications

Random processes
Discrete and continuous random processes: Introduction to probability distributions, correlation, spectral density, cross-correlation, statistics of narrow-band processes.

SM425 Operations Research 4
Three hours per week for one semester
A second-year subject of the degree course in mathematics and computer science.
Linear programming
Simplex method: Big-M method; two phase method; duality; dual simplex method; sensitivity; revised simplex technique; bounded variables; industrial applications. Use of computer packages such as SAG/CON.

SM426 Applied Statistics 4
Three hours per week for one semester
A third-year subject of the degree course in mathematics and computer science.

The analysis of variance
Revision of inference for two independent groups. The analysis of variance for single-factor, completely randomised designs, randomised blocks, and two-factor equally replicated designs. Non-parametric methods including Kruskal-Wallis, Friedman and Kendall's coefficient of concordance.

Multiple linear regression

Some theory of estimation

The MINITAB package will be used extensively in this subject.

SM427 Mathematics 4
Three hours per week for one semester
Prerequisite, SM327
Assessment by test/examination and assignments
A third-year subject of the degree course in mathematics and computer science.

Multidimensional space
Real n-dimensional space: subspaces, hyperplanes and convex sets. Inner product: resolution; distance between points; open, closed, bounded sets; limits of sequences. Functions, limits and continuity.

Linear functions
Matrix form; geometry of linear transformations. Canonical forms, definiteness, etc.

Non-linear analysis
Differentiability; Jacobian; change of basis. Real functions: Taylor expansion; extreme points and Hessian. Implicit function theorem.

Ordinary differential equations

Difference equations
Equations of first and second order: linear equations with constant coefficients; applications; numerical techniques.

SM504 Project Management B
Two hours per week for one semester
Prerequisite, SM404
Assessment by tests, assignments and written and oral project reports
A fourth-year subject of the degree course in mathematics and computer science.

SM519 Mathematical Methods
Three hours per week for one semester
Prerequisite, SM419
Assessment by test/examination and assignments
A fourth-year subject of the degree course in computing and instrumentation.

Complex Analysis
Algebra and geometry of complex numbers, functions of a complex variable, Cauchy-Riemann equations. Cauchy's integral and residue theorems. Evaluation of real definite integrals.

Calculus of variations
Simple variational principles. Euler-Lagrange equation, with applications.

SM525 Operations Research 5
Four hours per week for one semester
Prerequisite, SM425
Assessment by examination, assignment oral presentation and project reports
A third-year subject of the degree course in mathematics and computer science.

Dynamic programming
Introduction to dynamic optimisation: recursive algorithm; computational procedures; forward and backward computations; stochastic problems, final value problems, infinite horizon problems; the problem of dimensionality; solution of mathematical programming applications and case studies. Use of computer packages such as DYNACODE and PROPS.
Advanced forecasting
Stochastic time series models: autoregressive models; moving average models; ARIMA and ARFIMA models; the Box-Jenkins method; applications using forecasting packages such as SAS/OR.

Financial modelling
General financial modelling: consolidations; financial statement summaries; alternative decisions; capital investment techniques; multivariate statistics; discounted cash flow; linear programming; corporate modelling, computer approach; how models are acquired; broad guidelines of development; cost of development; preparing business plans; factors costs depend on; conditions for successful development: case studies.

Use of computer packages such as FORESIGHT, LOTUS.

Industrial project
The students, working in groups and supervised by a staff member who will act as a team leader, normally undertake a consultancy project for organisations outside the Institute (e.g. hospitals, industry, state bodies, etc.). Each group is expected to present planned progress reports on their project. At the conclusion of the project both oral and written reports are given to the clients.

SM526 Applied Statistics 5
Three hours per week for one semester
Assessment by test/examination and assignments

A fourth-year subject of the degree course in mathematics and computer science.

Sampling methods for Sample Surveys
The basic designs for sample surveys: simple random sampling, stratified sampling, systematic sampling and cluster sampling. Estimators for means, totals and proportions; variance estimation. The design effect; sample size determination; EPSEM samples. Practical issues and methods: questionnaire design; pilot surveys; mail, interviewer-based and telephone surveys.

Introduction to multivariate methods
Any introduction to sampling from multivariate populations. Variance-covariance matrix, the multivariate normal distribution; multivariate means, Hotelling's T^2 statistic, the multivariate analysis of variance. Wilk's lambda. Classification methods: cluster analysis, linear discriminant analysis.

Statistical packages such as SAS and SPSSX will be used.

Statistics essay
Students write an essay on a statistical topic not covered in lectures. References to suitable journal articles or recent texts will be provided.

SM527 Mathematics 5
Two hours per week for one semester
Prerequisite: SM427
Assessment by test/examination and assignments.

A fourth-year subject of the degree course in mathematics and computer science.

Topics will be selected from the following:

Introduction to formal mathematics
Proofs and theorems: example and counter-example; necessary and sufficient conditions; types of proof.

Sequences and series
Definition of a sequence; limits; types of divergent behaviour. Infinite series; some simple tests of convergence; properties of power series. Series solution of ordinary differential equations.

Functions and function series
Taylor and Maclaurin series; the exponential, cosine and sine functions; Taylor polynomials; Fourier series. Constrained maxima and minima; Lagrange multipliers; Euler-Lagrange method. Applications: Rayleigh-Ritz approximative method.

Partial differential equations
General solution of simple equations by integration; boundary value problems with common equations using Fourier series.

Calculus of variations
Constrained maxima and minima: Lagrange multipliers; Euler-Lagrange method. Applications: Rayleigh-Ritz approximative method.

Functional analysis
Function space as a linear and topological space: norm and inner products; Banach space.

SM625 Operations Research 6
Five hours per week for one semester
Prerequisite: SM526
Assessment by assignments, examination, oral presentation and project reports

A fourth-year subject of the degree course in mathematics and computer science.

Inventory control
Probabilistic models: re-order point models with stochastic demand; periodic review models with stochastic demand; single period models; dynamic inventory models; simulation approach; MRP approach; computer package, industrial applications.

Replacement
Relevant cost in replacement models; cost equation; discounted cash flow techniques; replacement of items that fail, mortality curves; conditional probability of failure; replacement process; cost of replacement; minimisation of costs; network solutions; other models.

Scheduling
The job-shop-process: classification of scheduling problems; measures for schedule evaluation; finite sequencing for a single machine; flow-shop scheduling; general nlm job-shop problem; applications; working with computer packages such as SAS/OR.

Mathematical programming
Branch and bound algorithm; applications in integer programming. Other optimisation techniques such as separable and quadratic programming and heuristics may be discussed. Industrial applications.

Use of computer packages.

Industrial project
Industrial project by a group of students working in groups and led by a staff member will act as team leader. Normally undertake a consultancy project for organisations outside the Institute (e.g. hospitals, industry, state bodies, etc.). Each group is expected to present planned progress reports on their project. At the conclusion of the project both oral and written reports are given to the clients.

Seminars
Throughout the semester the students will be given the opportunity to present seminars and participate in seminars presented by practitioners from business and industry.

SM626 Applied Statistics 6
Three hours per week for one semester
Assessment by test/examination and assignments

A fourth-year subject of the degree course in mathematics and computer science.

Sample Surveys
Ratio estimation, sampling unequal clusters, PPS sampling, cluster homogeneity, weighting, non-sampling error.

Topics in Applied Statistics
A selection of two or three topics will be made from a range of current statistical methods, econometric methods and design and analysis of experiments.

SM721 Introduction to Operations Research
Four hours per week for one semester
A subject of semester 1 of the graduate diploma of applied science (operations research)

The subject will cover operations research methodology and the interdisciplinary approach. In addition, the practical aspects of mathematical modelling will be illustrated by practical lectures, society and case studies from the literature and practical exercises. Exams will be drawn from traditional operations research techniques such as simulation and mathematical information technology, as well as modern developments in information technology such as decision support systems and artificial intelligence.

SM722 Stochastic Methods in Operations Research 1
Four hours per week for one semester
A subject of semester 1 of the graduate diploma of applied science (operations research)

Probability: laws of probability; conditional probability; random variables and the basic probability distributions (geometric, binomial, poisson, negative exponential, normal); expected values.
Statistics: description data analysis and presentation using summary and interval estimation. The above will be applied to quality control, statistics and graphical methods. The basic methods of Exploratory (operations research) Karush -Kuhn -Tucker theorem, sensitivity analysis. Selected zero, first software; applications in engineering and economics.

A subject of semester 2 of the graduate diploma of applied science Design and analysis of experiments: an introduction to the basic ideas and second order numerical techniques and the use of appropriate in the analysis of realistic problems.

SM724 Stochastic Methods in Operations Research 2
Four hours per week for one semester
A subject of semester 2 of the graduate diploma of applied science (operations research)
Design and analysis of experiments: an introduction to the basic ideas of experimental design including factorial designs with interaction; the analysis of variance.

SM725 Project Management
Four hours per week for one semester
A subject of semester 3 of the graduate diploma of applied science (operations research)
The activities involved in the management of projects; preparation of proposals and reports; pre-feasibility and feasibility studies; forward planning and other relevant elements of project control; reporting; elements of theory and practice of sampling and other relevant elements of statistical methods; the problems and pitfalls of computer packages such as SAS and SPSS/PC+

SM726 Operations Research in Industry 1
Four hours per week for one semester
A subject of semester 3 of the graduate diploma of applied science (operations research)
Forecasting: an introduction to the philosophy of multi-line forecasting; the A/B/C analysis of product lines; classical decomposition and exponential smoothing as applied to stock movements; the aggregation of product data, the selection of forecasting packages to meet the objectives of stock management.

SM727 Operations Research in Industry 2
Four hours per week for one semester
A subject of semester 4 of the graduate diploma of applied science (operations research)
Scheduling: the job-shop process; measures for schedule evaluation; flow-shop scheduling: general and job-shop problem.

SM728 Major Project
Four hours per week for one semester
A subject of semester 4 of the graduate diploma of applied science (operations research)
Students, working in groups under the limited supervision of a member of staff, will undertake a consultancy project for an industrial client. Each group is expected to present progress reports on its project. At the conclusion of the semester both oral and written reports will be given to the client.

SM731 Introductory Methods
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
This subject provides students with the basic statistical, quantitative and computer skills to provide them with a solid foundation for the remaining subjects in the course.

SM732 Survey Research Methods
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
The aim of this subject is to provide an overview of the methodologies used in survey research. It will include topics chosen from data collection methods, interviewing techniques, questionnaire design, data processing and social indicators.

SM733 Demographic Techniques
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
This course has been designed to introduce students to the methods of measuring demographic processes, and to develop an understanding of the implications of demographics in the business and social environment. The subject will introduce students to the sources of demographic data, examine methods for measuring fertility, mortality and migration, and examine methods for obtaining population estimates and projections. A feature of this course will be the accessing of census data using compact disk technology.
SM736  Computer Packages 2
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
This subject aims to extend the work done in Computer Packages 1
with particular emphasis on the advanced programming methods
of the standard packages. Also other packages such as SAS and dBase
would be introduced.

SM737  Multivariate Analysis
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
This subject aims to provide students with a non-mathematical intro-
duction to a number of multivariate statistical methods and their
applications.

SM738  Applied Project
Four hours per week for one semester
A subject of the graduate diploma of applied science (social statistics)
This subject takes students through all stages of a research project.
At the completion of the project, students will give a presentation de-
scribing the project and the results.

SP105  Science and Technology
Three hours per week for one semester
A first-year subject taken in semester 2 by students majoring in math-
ematics and computer science.
This subject aims to give students an appreciation of the tech-
nology with particular emphasis on those areas relevant to the Aus-
tralian Economy.
Two or three topics drawn from the following list will be discussed at
length: Fibre Optic Communication, Biomedical Instrumentation,
Supercructivity, Nuclear Material Processing, Scientific Instrument-
ation, Human/Machine Interaction.

SP106  Physics
Five hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree courses in applied science except
environmental health.
Motion and forces: relativistic kinematics and dynamics, rotational
kinematics and dynamics, gravitation.
Thermal physics: thermometry, conduction, radiation, gas laws, kinetic
theory, thermodynamics.
Optical systems: optical instruments, optics of human vision, polar-
ized light, birefringence, retarder plates, optical communications, fibre
optics.
Atomic and nuclear physics: photoelectric effect, photonelectron
interactions, De Broglie waves, forces between nucleons, nuclear
binding energies, radioactive decay, nuclear reactions.
DC circuits: electrical quantities and circuits, electrical instruments and
capacitance.

SP107  Physics
Nine hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree course in medical biophysics and
instrumentation and computing and instrumentation taken by students
who have not reached Year 12 Physics standard.
Motion and forces: relativistic kinematics and dynamics, rotational
kinematics and dynamics, gravitation.
Thermal physics: thermometry, conduction, radiation, gas laws, kinetic
theory, thermodynamics.
Optical systems: optical instruments, optics of human vision, polar-
ized light, birefringence, retarder plates, optical communications, fibre
optics.
Atomic and nuclear physics: photoelectric effect, photonelectron inter-
actions, De Broglie waves, forces between nucleons, nuclear binding
energies, radioactive decay, nuclear reactions.
DC circuits: electrical quantities and circuits, electrical instruments and
capacitance.

SP108  Physics
Five hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree course in computer-aided chemistry
and computer-aided biochemistry taken by students who have not
reached Year 12 physics standard.
Forces and Energy: kinematics, linear dynamics, circular motion,
gravitation, kinetic theory, heat, basic thermodynamics.
Modern Physics: atomic structure, radioactivity, quantum theory, special
relativity.
Electricity and Magnetism: magnetic and electric fields, Coulomb's
Law, electromagnetic induction, transformers, cathode ray tube,
puttermeter basic DCAC electronic circuits.
Light and waves: reflection, refraction, interference, diffraction, electro-
magnetic waves.

SP119  Physics 2
Five hours per week for one semester
Assessment by practical work, assignments and examination
A first-year subject of the degree course in environmental health.

MAJOR

Instrumental Science
Assessment by practical work and examination
An optional first-year subject of the degree course in computer-aided
chemistry and computer-aided biochemistry.
An introduction to the principles of measurement and instrumentation.
An introduction to analogue systems: circuits based on the semi-con-
ductor diode and the ideal operation amplifier.

SP206  Instrumental Science
Two hours per week for one semester
Assessment by practical work and examination
A first-year subject of the degree courses for students majoring in
medical biophysics and instrumentation.
Forces and Energy: kinematics, linear dynamics, circular motion,
gravitation, kinetic theory, heat, basic thermodynamics.
Modern Physics: atomic structure, radioactivity, quantum theory, special
relativity.
Electricity and Magnetism: magnetic and electric fields, Coulomb's
Law, electromagnetic induction, transformers, cathode ray tube,
puttermeter basic DCAC electronic circuits.
Light and waves: reflection, refraction, interference, diffraction, electro-
magnetic waves.
SP219  Physics  Four hours per week for one semester
A first-year subject of the degree course in environmental health.
The atom: descriptive treatment of emission and absorption of energy,
ionisation spectra, thermionic and photo-electric emission of electrons,
X-radiation.
The nucleus: proton and neutron, binding energy, instability and radio-
activity, nuclear reactions, tracer technique, monitoring of radioactive
levels.
Electro-magnetic waves: polarization, interference, diffraction.
Optics and images: mirrors, lenses, prisms, slits, gratings (function
and uses).
Signals and signal processing: transducers for mechanical, thermal,
optical sources, amplifiers, filters, gates, noise and interference, record-
ing and interpreting signals, instrument loading, hysteresis, calibration.
Lasers: in measurement of flow rate, particle density, etc.
Meteo rology: preparatory to role of stacks in air pollution.

SP220  Instrumental Science 2  Two hours per week for semester two
A first-year subject of the degree course in computer-aided chemistry
and computer-aided biochemistry.
Topics studied will include:
— further DC circuits;
— AC circuits;
— further optics — lenses, interference, diffraction etc.

SP224  Introductory Biophysics  Four hours per week for one semester
A first-year subject for students majoring in medical biophysics and
instrumentation.
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,
astro-intestinal function.

SP309  Physics 3  Four hours per week for one semester
A second-year subject by tests and assignments
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.
Quantum mechanics: statistical interpretation, Schroedinger's
equation — basic solutions, operators, eigenfunctions and
eigenvalues, Uncertainty principle, radiation-selection rules, many
body quantum mechanics, Pauli exclusion principle, lasers and
holography.

SP310  Analogue and Optical Techniques  Sixty hours in one semester
A second-year subject for students majoring in instrumentation.
AC circuits. Response of R, L and C components in isolation and
combination. Transformers. The ideal operational amplifier and circuits
based on it. The gain and phase shift of a real operational amplifier.
The effects of negative feedback.
Properties and applications of lasers: sources and detection of optical
radiation; — fibre optic sensors types and uses, properties of optical fibres
intensity, phase and frequency modulation in optical fibre sensors.

SP320  Instrumental Science 3  Three hours per week for three semester
A second-year subject of the degree course in computer-aided chemistry.
Topics studied will include:
— basic analogue electronics using diodes and operational amplifiers
but no other discrete devices;
— basic digital circuits — combinational logic, flip flops and their
uses.

SP324  Biophysical Systems  A  Sixty hours in one semester
A second-year subject for students majoring in medical biophysics and
instrumentation.
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, Usinig flux ratio equation, pore
hypothesis.
The action potential: the voltage clamp and the Hodgkin Huxley
equations, strength-duration curves, neurophysiology.
Synaptic transmission: competitive nature of transmitter release, electro-
physiological, electron microscopic and biochemical evidence, calcium
activation, acetylcholine receptor, excitation and inhibition in the central
system, prepulse synaptic inhibition, second messenger act
ic troic effects, classes of neurotransmitter, path-
ologies of synaptic transmission.
Autonomic nervous system: structure and function, sympathetic and
dorsal sympathetic divisions, adrenergic and cholinergic, synapses,
muscarinic, alpha and beta receptors and their blockade, purinergic
nerve, co-transmission.
Functional anatomy of the CNS, somatosensory, auditory, visual and
motor systems.

SP325  Biophysical Systems B  Sixty hours in one semester
A second-year subject for students majoring in medical biophysics and
instrumentation.
Muscle: length tension relationships, Hill equation, ultrastructure,
excitationcontraction coupling, slabbing filament theory, metabolic
aspects, E-C coupling in smooth muscle, pathophysiology of muscle,
electro-myography.
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 partic-
ular organs, Guyton's model.

SP330  Digital Fundamentals  Sixty hours in one semester
A second-year subject for students majoring in instrumentation.
R-S and J-K flip-flops and their use in shift registers and counters.
Timing considerations in the use of clocked logic.
An introduction to the hardware elements of a typical microprocessor
system. Interfacing a digital signal. An introduction to programmable
support interface devices.
An introduction to the use of a computer language for interfacing
Program design, timing, interrupts.
SP356  Physics  
Three hours per week for one semester
Assessment by laboratory reports and examination
A second-year subject of the degree course in computer-aided chemistry.

Quantum physics
Black-body radiation, photo-electric effect. De Broglie’s hypothesis, Uncertainty principle.
Schrödinger’s equation — expectation values, operators, eigenvalues and eigen functions. Applications from potential discontinuities, tr
Quantum theory of H atom by solution of Schrodinger’s equation. Angular momentum; probability density and orbitals.

Nuclear physics
Basic nuclear properties.
Structure and models.
Radioactivity and nuclear reactions.

SP401  Experimental Techniques  
Thirty hours in one semester
Assessment by assignments and examinations.
A second-year subject for students majoring in medical biophysics and instrumentation.
Earthing and shielding: reduction of noise and interference.
Electrical safety: Australian Standards for biomedical circuits.
Treatment of biophysical data: biological statistics and data processing packages.
Applications of mathematical models of physiological systems to experimental work, numerical methods in biophysics.
Nuclear studies: radiation safety, dosimetry, radiopharmaceuticals in clinical practice.

SP409  Physics 4  
Four hours per week for one semester
Assessment by assignments and examination
A second-year subject of the degree course for students majoring in instrumentation.

Nuclear physics
Nuclear models — liquid drop model, Fermi gas model, shell model, collective model. Nuclear decay and nuclear reactions.

Electromagnetism
Maxwell’s equations: continuity equation scalar and vector potentials, macroscopic fields, polarization, magnet induction relations.

Optics

Solid state physics

SP410  Analogue Devices and Applications  
Sixty hours in one semester
Assessment by examination, assignments and laboratory reports.
A second-year subject for students majoring in instrumentation.
An introduction to the field effect transistor. Common source and drain amplifiers. Other semiconductor devices.
Power supplies, stability of feedback circuits. Other semiconductor devices.

SP419  Occupational Health and Safety  
Four hours per week for one semester
Assessment by examination and assignments
A second-year subject of the degree course in environmental health.

Environmental hazards
Accident prevention, Work-related injuries including tendonitis, back and muscle injuries. Relationship of physical defects to employee safety. Stress in the workplace, measurement and alleviation.
Heat and ventilation. Measurement of dusts and fumes, bio-effects.
Body temperature regulation, effects of heat and cold.
Radiation: ionising and non-ionising (including ultra-violet, visible light, infra-red, radio frequency and laser). Identification and bio-effects.
Hazard assessment and control.

Toxicology
Routes of ingestion of toxic substances including heavy metals, benzene, PCB, solvents, organic chemicals, silica, asbestos, allergens and pesticides.
Evaluation and control measures.

Safety technology
Chemical safety. Handling, chemical safety, hazard identification, storage and transport of dangerous and toxic chemicals.

SP420  Instrumental Science 4  
Three hours per week for semester four
A second-year subject of the degree course in computer-aided chemistry.

Topics studied will include:
— digital to analogue and analogue to digital converters;
— the organisation of a computer, especially input/output;
— hardware and software aspects of parallel interfacing;
— hardware and software aspects of analogue interfacing.

SP424  Clinical Monitoring A  
Sixty hours in one semester
Assessment by examination, assignments and laboratory reports.
A second-year subject for students majoring in medical biophysics and instrumentation.

Cardiac monitoring and pathologies.
The ECG: genesis of myocardial field, lead systems, vectorcardiography. ECG changes in disease; effects of heart position, arrhythmias and conduction defects, pacemakers and defibrillators.
Monitoring pressure and flow. Ultrasonic and electromagnetic flowmeters, non-invasive techniques. Cardiac output by dye and thermal dilution, electrical impedance method, phono- and echo-cardiology.
Neuropsychological monitoring: ongoing brain electrical activity, visual, auditory and somatosensory evoked responses; the ERG, EOG.
Intensive care instrumentation: design philosophies, data processing and monitoring, ambulatory care, telemetry. Cardiopulmonary-bypass, requirements and design. 
SP425 Clinical Monitoring B
Sixty hours in one semester
Prerequisite: SP324 or SP325
Assessment by examination, assignments and laboratory reports

A second-year subject for students majoring in medical biophysics and instrumentation.

Respiratory system: structure and function, lung volumes and dead space, diffusion, blood flow; ventilation/perfusion ratio inequality; gas transport, Bohr and Haldane effects, acid-base status, respiratory mechanics, control of respiration.

Lung function testing for lung diseases, obstruction, restriction: flow-volume curves, diffusion capacity, compliance, body plethysmography, response to exercise, small airway assessment, ventilaturation.

Renal vasculature: the juxtaglomerular apparatus, kidney function tests, countercurrent multiplication, control of kidney function, renal pathophysiology, the artificial kidney.

Monitoring the birth process: maternal, foetal and neo-natal monitoring; uterine activity, foetal heart rate, Apgar scoring; neonatal circulatory monitoring.

Anaesthesia: agents and their administration; monitoring; physiological effects of anaesthesia, mathematical modelling.

SP430 Interfacing and Nuclear Techniques
Sixty hours in one semester
Prerequisite: SP330
Assessment by examination, assignments and laboratory reports

A second-year subject for students majoring in instrumentation.

Analog to digital and digital to analogue conversion. Sample and hold. Serial communications. Interrupts. Direct memory access. An introduction to networking instruments.

Nuclear transducers: radiation safety, radiation detectors, pulse height analysis, spectrometry.

SP501 Signals and Systems
Four hours per week for one semester
Assessment by laboratory reports and examination

A fourth-year subject of the degree course for students majoring in instrumentation.

Signals in time and frequency domains: measurement and interpretation of spectra, applications of Fourier analysis.

Linear systems: time invariance, impulse response, system function, causality, system testing, phase and amplitude responses and time delays, filters.

Digital processing: signal sampling and reconstruction, digital spectral analysis, DFT and FFT, digital filters, linear prediction and bandwidth compression.

Noise: averages, signal estimation and detection.

Image processing: Fourier optics, holography and tomography.

Information theory and codes.

SP509 Physics 5
Two hours per week for one semester
Assessment by practical work, assignments and examinations

A fourth-year subject of the degree course in medical biophysics and instrumentation.

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.

SP510 Scientific Instrumentation A
Sixty hours in one semester
Prerequisite: SP410
Assessment by examination assignments and laboratory reports

A fourth-year subject of the degree courses for students majoring in instrumentation.

Lectures on a series of topical aspects of scientific instrumentation.

A series of open-ended experiments in networking computers and instruments together to achieve instrumentation functions; optical instrumentation and imagery.

SP524 Neurosciences A
Sixty hours in one semester
Prerequisites, either SP424 or SP425 and SP324
Assessment by examination, assignments and practical work

A fourth-year subject of the degree course for students majoring in medical biophysics and instrumentation.

Neuroanatomy: spinal cord organisation, histological features, brain imaging, the homologous, subcortical structures, gross anatomy.

Volume conductor theory: application to the EEG.

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, motor cortex, motor circuits to basal ganglia and cerebellum, spinal pathways, pathology, skilled movement, learning, open and closed loop operation.

The chemical senses: olfactory, gustation.

SP525 Applied Biophysics A
Sixty hours in one semester
Prerequisites, either SP424 or SP425 and SP325
Assessment by examination and laboratory reports

A fourth-year subject for students majoring in medical biophysics and instrumentation.

Physiological systems: conduction, signal flow diagrams, fundamental block diagrams, 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.

Multicomponent systems and methods of analysis, models of membrane systems.

SP530 Scientific Instrumentation B
Sixty hours in one semester
Prerequisite, SP430
Assessment by examination, assignments and laboratory reports

A fourth-year subject for students majoring in instrumentation.

An introduction to control theory: control system modelling electrical and mechanical systems, transfer functions, open and closed loop systems, poles and zeros, positive feedback, root locus techniques.

Compensation, design of open loop experiments on computer-based imaging and on nuclear instrumentation.

SP531 Biophysical Systems and Techniques
Four hours per week for one semester
Continuous assessment by tests and assignments

An advanced subject of the biomedical instrumentation option of the graduate diploma of applied science.

Biophysics: tracer dynamics, Applications of thermodynamics, Active transport.

Membrane-based biosensors.

Biophysical techniques, Electron microscopy, Electron and proton microbeam analysis, Diffraction studies of biological materials, Autoradiography, Optical methods, NMR and ESRI studies.

Physiological control mechanisms, mathematical models of physiological systems.
SP532  Clinical Monitoring Techniques
Four hours per week for one semester
Continuous assessment by tests and assignments
An advanced subject of the biomedical instrumentation option of the graduate diploma of applied science.
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.

SP533  Aspects of Metabolic Measurement
Four hours per week for one semester
Assessment by assignment and tests
An advanced subject of the biomedical instrumentation option of the graduate diploma of applied science.

SP534  Neurophysiological Techniques
Four hours per week for one semester
Assessment by assignments
An advanced subject of the biomedical instrumentation option of the graduate diploma of applied science.

SP535  Project
Four hours per week for one semester
A compulsory subject of the biomedical instrumentation option of the graduate diploma of applied science.
Tutorials and analogue and digital electronic application techniques. The development, construction and commissioning of a biomedical instrumentation system.

SP536  Project
Four hours per week for one semester
Assessment by project work, report and presentation
A subject of the scientific instrumentation option of the graduate diploma of applied science.
The design, construction and commissioning of a substantial component of an advanced scientific instrumentation system.

SP537  Medical Imaging (Subject to approval)
Four hours per week for one semester
Assessment by assignments and tests
An advanced subject of the biomedical instrumentation option of the graduate diploma of applied science.
Interrogation methods: beamed radiation (visible, IR, Microwave, X-ray, Ultrasound), internally deposited radiation (gamma rays, SPECT, PET), selective excitation (NMR). Physical qualities of tissue measured by the interrogation.
Image construction methods: real-time ultrasound, interactive and filtered back-projection methods, 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.

SP541  Signal Processing
Four hours per week for one semester
Assessment by examinations
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.
(1) Linear and non-linear systems, response functions, functionals, Volterra and Wiener expansions, system kernels.
(2) Signals, spectra, mean square estimation, orthogonality, principal component analysis, probability, stationary and non-stationary stochastic processes.
(3) Data, smoothing, windows, averages, filters, digital filters, recursive filters, autocorrelation, cross-correlation.
(4) System estimation, spectral analysis, correlation and coherence, white noise methods, system kernel estimation.
(5) Digital processing review of DFT, FFT, Z-transform, Hilbert transform.
(6) Information theory: codes and encoding techniques; redundancy and efficiency, error correction and detecting codes; signal transmission mutual information; channel capacity, band limited signals, noisy channels, signal detection.

SP542  Optical Instrumentation
Four hours per week for one semester
Assessment by assignments and examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.
Incoherent and coherent light sources, types of lasers and their applications. Detectors of optical radiation, modulation of light, interferometry, lens design, fibre optics, Fourier transforms and imagery.

SP543  Vacuum Systems
Sixty hours in one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.

SP544  Nuclear Instrumentation
Sixty hours in one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.

SP545  Instrument Programming and Interfacing
Four hours per week for one semester
Assessment by practical work, reports, assignments, examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.
Interfacing peripheral devices
Programming and interfacing techniques for microprocessor peripheral support ICs — 110 ports, serial communications, graphics, direct memory access controller.
Techniques for controlling instruments using standard bus modules.

General purpose instrumentation box (IEEE 488)
Structure, functions of talkers, listeners and controllers, timing, electrical characteristics, interfacing a controller chip set to an intelligent instrument. Assembler programming, system programming. Example of a programmable instrumentation system.

SP546  Instrumentation Systems
Four hours per week for one semester
Assessment by practical work/ reports and examination
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.

Data acquisition systems
(a) Analog systems
Transducers, signal conditioning.
Scanners, multiplexers, visual display devices, graphic recording.
Magnetic tape storage.
(b) Digital systems
Analog-to digital and digital-to analog conversion, digital recorders.
Interference and noise
Thermal and quantum noise, noise power spectrum, equivalent noise power, noise coupling, electric field shielding, magnetic field shielding, grounding, guarding, contact noise, filters and filtering, noise reduction techniques.

Scientific instrument systems
A study of selected scientific instruments (e.g., IR, UV, spectrophotometers, electron microscope).

SP551 Instrumentation Principles and Techniques
Four hours per week for one semester
Assessment by practical work, reports, assignments and examination

An introductory subject of the instrumentation options of the graduate diploma of applied science.

Measurement principles
The role of measurement, the units of measurement, standards, systematic and random errors particularly as applied to the traceability of standards, limits of detection and resolution, sensitivity, noise, analogue and digital readout — discussion of the above principles.

Transducers
Precise DC measurement — techniques, measurements, problems. Floating and guarded measurement. Principles of transducer operation. Transducers — AC or DC, active or passive, activator or sensor. A selection from the above groupings to cover the broad range of transducers available. The interfacing of transducers — signal processing applications, transmitting applications.

Instrumental practice
Theoretical and practical course based on:
(1) Instrument components and mechanisms, e.g., servomotors, stepping motors, galvanometers, electric components.
(2) Printed circuit board techniques, e.g., artwork, negative, manufacture, drilling, soldering.
(3) Prototyping techniques, e.g., wire wrap, bread board.

SP552 Introduction to Scientific Instrumentation
Four hours per week for one semester
Assessment by practical work, reports, assignments and examination

An introductory subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science. Basic nuclear physics: basic nuclear properties, nomenclature, stable and unstable nuclides, radiations, interaction with matter. Table of isotopes, decay schemes.

Detectors: general survey, including Geiger, scintillation and solid state detectors.

Instrumentation: NIM system, pre-amplifiers, main amplifiers, discriminators, single channel analysers, counters, timers, ratemeters, sweeps, recorders, multi-channel analysers.

Safety: hazards, precautions, sealed and unsealed sources, monitoring.

Chemical/atomic instrumentation
Atomic structure, atomic weight and atomic number, Avogadro’s number, kinetic theory, solids, ionic lattices, molecules, molecular weights, electrochemistry, dissociation, conductance, acids and bases, cells, redox reactions, thermodynamics.

Optical instrumentation
Waves and particles, refractive index, reflection, lens and mirrors, polarisation, diffraction, interference, prisms and gratings, interferometers, sources of radiation, detectors.

SP553 Introduction to Instrumentation Electronics
Four hours per week for one semester
Assessment by practical work, reports and examination

An introductory subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science.

DC circuits
Voltage, current laws, laws of resistance in series and parallel, Kirchhoff’s laws, Thévenin’s and Norton’s equivalent, serial and parallel combinations of voltage and current sources, non-linear resistances.

AC circuits
Sinewaves, AC power, capacitance, inductance, impedance, RLC circuits, tuned circuits, integrator and differentiator circuits, mutual inductance, transformers.

Diodes
Semiconductor materials, the pn junction, diode specifications, Zener diodes, special types of diodes.

Power supplies
Rectification, voltage and current regulation

Amplifiers and semiconductor devices
(a) Theory of amplifiers
Sources of electrical signals, voltage amplifiers, current amplifiers, gain, impedance relationship, feedback, input and output

(b) Transistor circuits
Small signal characteristics, gain, input impedance, output impedance, bias, current and voltage feedback, darlington pairs, current mirror, differential pairs, AC and DC coupled amplifiers, bias and gain of multiple transistor circuits, power amplifiers.

(c) Field effect transistors
Small signal characteristics, J-Fets, mosfets, bias and gain, fet amplifiers.

(d) Semiconductor devices
Unijunction circuits, SCR and triac circuits.

Digital systems
Numbers in digital systems.

Digital logic, digital devices.

SP555 Introduction to Biophysical Systems
Four hours per week for one semester
Assessment by practical work, reports and examination

An introductory subject of the biomedical instrumentation option of the graduate diploma of applied science, for students with an inadequate background in the biological aspects of biophysics.

Cell physiology, membranes and excitability, nerves and muscles. Bioenergetics. Flow and pressure. Biological control systems.

SP601 Stand Alone Instrumentation
Two hours per week for one semester
Assessment by reports

A final semester subject for students majoring in computing and instrumentation.

The Forth language and the design of time critical turnkey instrument systems. Implementing a program in Forth: incremental compilation, stack maintenance, multiple vocabularies, special features of the language. A design project will form the second part of this unit.

SP602 Special Project
Two hours per week for one semester
Assessment by reports

A fourth-year subject for students majoring in medical biophysics and instrumentation. 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 co-operative 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.

Faculty of Applied Science
**SP609 Physics 6**
Two hours per week for one semester
Assessment by practical work, assignments and tests
A fourth-year subject for students majoring in medical biophysics and instrumentation.
Selected topics of special interest to students of biophysics and instrumental science. A selection will be made from the following areas:
- Solid state devices: lasers, solar cells, new materials, chemical machining.
- Applications of superconductivity: Josephson junctions, particle accelerators.
- Nuclear power: developments in fission and fusion reactors, magnetic and inertial confinement.
- Tomography: X-ray, NMR, positron emission.
- Fibre optics: sensors, communication.
- Electromagnetic interference and shielding.
- Ultrasonics.

**SP610 Instrumentation Systems A**
Sixty hours in one semester
Prerequisite, SP510
Assessment by examination and laboratory reports
A fourth-year subject for students majoring in instrumentation.
Student and staff-presented seminar series.
Major instrumentation project A.

**SP624 Neurosciences B**
Sixty hours in one semester
Prerequisite, SP624
Assessment by examination, assignments and laboratory reports
A fourth-year subject for students majoring in medical biophysics and instrumentation.
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 vestibular testing techniques, evoked potentials, cortex, brainstem, ENG, auditory prostheses, vision: anatomy of the eye, optics of visual system, receptor function, central pathways, central processing, electrical recording of ERG, EOG, visual evoked response, intraocular pressure, recording, examination, pathology, assessment, adaptation, acuity, perimetry, spatial frequency.
EEG: origin, recording, interpretation, analysis.
- Neurophysiological signal processing: basic concepts and methodology.
- Plasticity in the CNS.
- Neuropsychopharmacology.
- Sleep and consciousness.
- CNS disorders: epilepsy, dementia.

**SP625 Applied Biophysics B**
Sixty hours in one semester
Prerequisite, SP501
Assessment by examination, assignment and laboratory reports
A fourth-year subject for students majoring in medical biophysics and instrumentation.
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.
Biomaterials: biocompatibility, implants in orthopaedics and dentistry, arterial prostheses, cell-substrate interactions.
Environmental biophysics: ergonomics, stress in the workplace, tennosynovitis and RSI, effects of noise, electromagnetic radiation, etc.
Effects of heat and cold. Bioeffects of atmospheric pollutants.

**SP626 Applied Neurosciences**
Thirty hours in one semester
Prerequisite, SP524
Assessment by assignments, examination and practical work
A fourth-year subject for students majoring in biophysics and instrumental science.
Advanced signal processing: EEG, brain magnetic fields.
Neurometric analysis, P300, CNV, coherence analysis.
Neuronal modelling.
Cognitive processes.
Speech: laterality, learning, mechanics, interpretation, injury.
Memory.
- Behavioural aspects of sleep and consciousness.
- Affective status, emotion.
Disorders of higher cortical functions: depression, anxiety, schizophrenia.

**SP630 Instrumentation Systems B**
Sixty hours in one semester
Prerequisite, SP530
Assessment by examination, assignments and laboratory reports
A fourth-year subject for students majoring in instrumentation.
Advanced control theory.
Major instrumentation project B.

**AB210 Applied Psychology**
Two hours per week for one semester
Assessment is continuous
A first-year subject of the degree course in environmental health.
The emphasis in this course will be on interpersonal communication skills and stress management. Topics in communication will include: non-verbal and verbal communication, one-to-one communication skills, coping with conflict at an interpersonal level, personality influences in communication and psychological aspects of communication. Topics in stress management will include: principles of behavioural psychology, relaxation, nutrition and mental health.

**AB215 Complementary Studies**
Two hours per week for one semester
Assessment is continuous
A first-year subject of the degree courses in applied science, except in environmental health.
The course has two aims.
The first is to develop communication skills including the preparation of oral and written reports.
The second aim is to expand students' understanding of the nature of modern science; the social impacts and implications of science and technology, and of social processes with special reference to the Australian social context.

**AB310 Behavioural Studies**
Two hours per week for one semester
Assessment is continuous
A second-year subject of the degree course in environmental health.
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.

**AB411 Scientific Communication 4**
One hour per week for semester four
A second-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.
Training and practice in the preparation of structured written reports, using scientific theories, models and/or hypotheses as the subject matter.
AB510 Research Skills
Two hours per week for one semester
Assessment is continuous
A fourth-year subject of the degree course in environmental health.
The course builds on earlier study of both psychology and communication skills using students' own experience in industry as a basis. The communication component will focus on aspects of oral presentations and written reports, the psychological component will focus on aspects of behaviour and group dynamics experienced in the workplace.

AB513 Brain and Behaviour
Thirty hours in one semester
Assessment by assignment and examination
A fourth-year subject of the degree course in medical biophysics and instrumentation.
A study of the philosophical and ethical implications of advances in the neurosciences.
Topics will include: biological and environmental determinants of the human and the mind-brain problem in the neurosciences.

AB611 Science and Society
Two hours per week for one semester
Assessment is continuous
A fourth-year elective subject of the degree courses for students majoring in computing.
By train current issues, case studies and controversies surrounding the social impact of science, this course seeks to develop an understanding of the nature of modern science and its relation to social, economic and political processes. The role of scientists, the social forces that shape science and methodologies appropriate to the social analysis of science will also be explored.

A6612 Science and Ethics
Two hours per week for one semester
Assessment is continuous
A fourth-year elective subject of the degree courses for students majoring in computing.
In this subject, students examine some of the value systems associated with science, including morality, religion and the law. The aim is to develop a critical awareness of the nature and assumptions of ethical arguments which give rise to conflicts of values and moral dilemmas.

AB619 Communication Studies
One hour per week for one semester
A fourth-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.
This subject provides training and practice in the presentation of oral reports. Topics include:
1. How communication works — theory, basic model, stages, interference, feedback, etc.
2. Special needs of oral reporting — level of language, face, stance, voice, eye contact, etc.
3. Use of visual aids — advantages, pitfalls, etc.
4. Impromptu talks vs. prepared speeches.
5. Research methods, note-taking, structuring.
6. Conveying the essence of a subject for varied audiences: making technical information comprehensible.

A6711 Communication 7
One hour per week for semester seven
A final-year subject of the degree courses in computer-aided chemistry and computer-aided biochemistry.
Training and practice in the presentation of oral reports related specifically to chemistry or other scientific topics.

AB881 Communication 8
One hour per week for semester eight
A fourth-year subject in the degree course in computer-aided biochemistry.
Oral reports related to the history and philosophy of science (particularly chemistry and biochemistry) and the social impact of science and technology.

BS141 Introductory Law
Three hours per week for one semester
A first-year subject of the degree course in environmental health.
Delegated legislation:
(a) relevance to health surveyors.
(b) advantages and disadvantages.
(c) review through parliament and the court.
(d) other methods (e.g., regulation).

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); strict liability (hazardous materials).

Juries as a source of law — the main judicial approaches to statutory interpretation (plain meaning and policy). The context of words in a statute, the audience to be put on particular rules: meanings limits contradictions and synonyms in a statute, the audience, the purpose. Particular rules; meanings limited to social and economic goals in a statute.

Delegated legislation: by legal concepts (legislating corporate liability for criminal conduct appropriate?); and property (environmental and planning controls). Changing the law (involvement by health surveyors in changes to building control, role and structure of Local Government, food laws).

BS253 Law: Environment Protection, Health and Food Laws
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
Legislation relevant to the health surveyor in Local Government: the Health Act, enabling legal provisions, e.g., nuisance, sanitary, infectious disease, by-laws, 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 health surveyor in State Government Authorities.
The Health Commission — in addition to the Health Act and the Food Act, further relevant legislation with respect to drugs and health services will be considered.

BS254 Law: Procedure and Evidence
Four hours per week for one semester
A second-year subject of the degree course in environmental health.
The legal process of prosecution — choosing the appropriate court, pleading, examination of the party, examining the evidence, cross-examination, negotiation of the Environment Protection / State Environment Protection policies and regulations thereunder.
Relevant judgements on the application/interpretation of the legislation will be studied.
BS428 Administration and Management
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health. Introduction to management techniques used in Local Government. Study of the health surveyor's role within the structural framework of the Local Government organisation. The Local Government financial system. Consideration of financial and resource management in the Local Government environment. Data processing, use of statistics, management of information and other administrative processes. The dynamic nature of administration and management, and an overview of the practices and procedures necessary to support the occupational framework of health surveyors in the field.

BS447 Administrative Law
Two hours per week for one semester
A fourth-year subject of the degree course in environmental health. To consider efficient internal administrative procedures to ensure against liability for negligent advice. The role of safety committees under Occupational Health and Safety Legislation. The role of the Ombudsman and Committees of Enquiry. The Administrative Law Act and review by courts and tribunals of the Administrative Process, the application of the rules of natural justice, notice and fair hearing, the duty to give reasons, impartiality and bias. Challenging decisions made: (1) in excess of statutory powers, (2) unreasonably, or (3) for improper purpose or bad faith. The Freedom of Information Act and its interpretation by the courts.

BS510 Business Studies
Five hours per week for one semester
A first-year subject of the degree course in computing and instrumentation.
Accounting
The business environment; financial statements (balance sheet and profit/loss); analysis and interpretation; cash management; cash budgeting; finance decisions.
Economics
Markets and efficient resource allocation; demand analysis; production and cost analysis; an introduction to profit and pricing.

BS511 Business Studies
Five hours per week for one semester
A first-year subject of the degree course in mathematics and computer science.
Accounting
The nature of accounting; the accounting cycle; accounting for limited liability companies; taxation implications for business entities, exercising financial control; cash flow analysis; operating and financial statements.
Economics
Markets and efficient resource allocation; demand analysis; production and cost analysis; profit and pricing.

BS512 Business Studies
Four hours per week for one semester
A first-year subject of the degree course in mathematics and computer science.
Accounting
Cost and management accounting process; product costing methods; standard costing; preparation and use of budgets; capital expenditure analysis and decision-making.
Economics
Profit and pricing; industry economics; Australian industries; Australian economy, features and challenges.

BS517 Business Studies
Two hours per week for one semester
A fourth-year subject of the degree course in mathematics and computer science. The general objective of the unit is to provide students with an understanding of concepts and methods employed in accounting and finance that assist management in decision making, planning and control. In particular the unit will focus on: — financial performance evaluation; — profit planning and fund flow analysis; — working capital management; — sources of finance; — role of stock exchange and financial intermediaries; — forecasting planning and control; — finance strategies; — discounted cash flow analysis; — cost of capital.

BS617 Computers and the Law
Two hours per week for one semester
Assessment by segment tests or some combination of segment tests and assignments
An optional fourth-year subject for students majoring in computing. An introduction to the legal system will be followed by a discussion of selected aspects of industrial/intellectual/property law, tort, contract and trade practices law relevant to the needs of future computer professionals.

BS618 Management of Human Resources
Two hours per week for one semester
Assessment by tests and assignments
An optional fourth-year subject for students majoring in computing. The objectives of the subject are to enable students to: (a) understand the nature and importance of human resources as an organisational asset; (b) obtain a better understanding of themselves, their impact on other people and the way other people influence their own behaviour; (c) explore the implications of both work groups and informal groups in organisations; (d) consider the impact of alternative organisation designs on organisational effectiveness; and (e) understand the role of managers and the impact of alternative managerial style on organisational effectiveness.

BS619 Business and Management
Four hours per week for one semester
A fourth-year subject of the degree course in computer-aided chemistry and computer-aided biochemistry. The subject develops and integrates principles from various fields of economics, accounting, and business where they assist management decision-making and policy formulation within the firm.

BS720 Chemistry and the Law
Two hours per week of lectures/tutorials
A subject in the graduate diploma in industrial chemistry.
Law and administration
Control of chemical and industrial hazards
Toxic chemicals and biochemicals and methods of assessment of toxicity
Evaluation and control measures for carcinogenesis, mutagenesis, teratogenesis. Use of mammalian and sub-mammalian systems in assessing toxic effects in man. TLV's and LD's. Regulations relating to the use of chemicals in industry. STATUTORY COMMITTEES. Chemicals in food (natural and additives).
CE236 Health Engineering
Four hours per week for one semester
A second-year subject of the degree course in environmental health.

Hydraulics
Physical properties and units. Hydrostatics, pressure density, height relationships; pressures and forces on immersed surfaces, buoyancy; Bernoulli’s equation and application to simple examples; chutes, orifices, weirs. Concepts of total energy line, hydraulic grade-line.

Hydrology

Urban stormwater drainage

Sewerage
Composition and volumes, domestic plumbing, sewer location, grades, sizes, materials, appurtenances. Sewerage treatment, the decay cycle. Primary, secondary and tertiary processes. Septic tanks, small sewerage treatment plants, lagoons.

CE423 Town & Country Planning
Two hours per week for one semester
Assessment by examination and assignment

CE436 Health Engineering
Two hours per week for one semester
Assessment by tests and assignments
A fourth-year subject of the degree course in environmental health.

Water supply
Water quality standards: storage and distribution; treatment processes; pollution and health risks.

Swimming pools and spa baths
Water circulation and treatment, health risks.

Stream pollution
Sources and nature of polluting substances, effect on bodies of natural water, oxygen balance, eutrophication.

Soil mechanics
Introduction to soil mechanics including rock classification, weathering processes, soil formation. Physical and index properties of soil. Soil classification systems including laboratory and field identification and classification. Soil permeability and groundwater flow.

Solid waste disposal
Composition of domestic waste. Operation of sanitary landfills, transfer stations, recycling depots, and incinerators.

Surveying
Introduction to levelling and reductions, measuring and setting out. Basic computation techniques. Contour properties and plotting. Land identification. Practical classes showing application of instruments.

EE541 Control Systems
Four hours per week for one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science. Review of linear feedback. Control theory. Introduction to non-linear systems. Introduction to state variable approach to systems. Simulation of systems. Introduction to the state variable approach to system. Saturation and state space analysis. Discrete data systems and sampling theory. Introduction to digital control techniques.

EE542 Applications of Computer Devices
Four hours per week for one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science. The aim of this subject is to introduce students to small computer equipment and techniques used in real-time monitoring, control, acquisition and transmission applications. The emphasis is on small computer systems. Introduction: the philosophy and architecture of stored program computers. Single board computer: introduction to MCS86 architecture and applications. Instruction set and peripheral chip functions. Data transmission methods: CCITT V24, RS332, IEEE 488 general purpose interface bus. Computer peripherals: graphic output techniques, intelligent peripherals, bulk storage. PDPI minicomputer. PDP11 architecture and instruction set. PDP11 data acquisition example: A/D conversion, real-time sampling, multiplexing, interrupts, effects of word length and sampling rate. Commercially available data acquisition modules. Review: comparison of features and limitations of other microcomputers and minicomputers.

EE543 Data Transmission for Instrumentation
Four hours per week for one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science. Moderns, modulation methods, interfacing, line-conditioning, multiplexers and concentrators, switched and leased lines, Datel, CCITT standards. Protocols, bit- and byte-oriented protocols, BSC, HDLC, SNA, ISO Model. Public data networks, Datel AUSTPAC, DDN. Local area networks, topology, access methods, examples, e.g., Ethernet. Analogue data transmission, process control examples. Electrical isolation, noise and interference reduction, optical fibres transmission methods, error control and data security.

EE554 Electronic Systems
Four hours per week for one semester
A subject of the biomedical instrumentation and scientific instrumentation options of the graduate diploma of applied science. Analogue electronics: operational amplifier analysis and design. Linear and non-linear amplifiers. Digital electronics: sequential circuit design, algorithmic state machines and microprocessor hardware. Software techniques and interfacing circuits.

IT101 Computer Fundamentals
Five hours per week for fifteen weeks
A first year subject of the Bachelor of Information Technology course. An understanding of the principles of operation of computer hardware and software components is fundamental to an Information Technology course. The study of the way in which computers and minicomputers work is also fundamental and leads to an understanding of the powers and limitations of computers. The unit will introduce the skills required to use both micro and mainframe operating environments.

Syllabus
Introduction to operating systems: data management, time sharing, batch and on-line systems.

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

Five hours per week for fifteen weeks.

A first year subject of the Bachelor of Information Technology course.

Objectives

This unit serves as the student's introduction to commercial programming and to proven programming style and technique. Both these objectives are solved by the use of the programming language, PL/1.

This language contains the ingredients generally considered to be essential to illustrate structured programming constructs and, in addition, it is a language in current commercial use. The course will emphasize data processing, in that the language is used as a vehicle by which to maintain data sets and produce reports from these data sets.

The course will produce students who have written the type of programs common in commercial data processing, and the level of control 'break reporting' and sequential file update. The student must also be familiar with the environment of programming; i.e., program specification, testing and documentation.

Syllabus

Program Structure: sequence, selection, iteration.

Demonstration Program: program execution and simple modification.

Data Types: declaration, characters, strings, decimal, binary.

Flow of Control: DO WHILE, IF, SELECT, DO UNTIL, LEAVE, REPEAT, GOTO and labels.

Basic Input/Output: stream I/O, list directed I/O, ON ENDFILE, SKIP, LINE, PAGE.

String Processing: character strings, string operators, concatenation, INDEX, SUBSTR.

Arrays: declaration and reference; operations: searching, modifying, sorting, modifying, merging, multi-dimensional arrays.

Program Specification: declaration/call, argument g, p, and 1 local/global variable scope.

Structures: declaration, assignment of values, structure I/O.

Files: Stream, record I/O, file types: serial, index sequential, direct.

File Processing Techniques: serial processing; reporting, selection reporting, control break, file update; index sequential processing; selection reporting.

IT103 Business Applications & Systems 1

Five hours per week for fifteen weeks.

A first year subject of the Bachelor of Information Technology course.

Objectives

The aims of this unit are to:

- Introduce students to the component parts of common business systems such as Inventory, Accounts Receivable and Accounts Payable.

Give students skills in using personal computers, particularly in productivity tools such as word processing, spreadsheets, and graphics.

Examine the use of mathematics in accounting and other transaction processing.

Syllabus

Introduction to Information Systems and Accounting: The role of computers in Information Systems, Introduction to the Personal Computer, Word Processing, Spreadsheets — LOTUS 123.

System components: A system-identification of components.

Files: classification, recording, updating, documenting systems.

Accounting Systems: Integrity Accounting package, inventory, accounts receivable, accounts payable.


Microcomputer systems: introduction to business support systems; spreadsheets, DBase etc. Report generators.


Case study presentations.

IT104 Management and Communications

Five hours per week for fifteen weeks.

A first year subject of the Bachelor of Information Technology course.

Objectives

The course aims to provide participants 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.

Syllabus

Communication, Perception, Transactional Analysis

Interviewing skills.

Organisation culture, the nature of groups, communicating in groups, understanding groups, group presentations, group effectiveness, and organisation research.

Oral presentations; report writing;

Assertiveness skills; negotiation skills.

Group Project.

IT122 Mathematics

Four hours per week for one semester.

An elective subject of the Bachelor of Information Technology course.

Syllabus

Methodology: the development of operations research, the scientific approach to decision making problems, the art of model construction and the science of model solution, data collection, implementation, applications.

Linear programming: the formulation of linear programming problems, graphical solution of two variable problems, the Simplex method, sensitivity analysis, transportation, trans-shipment, assignment, the use of computer packages such as SAS/OR.

Inventory control; inventory systems, economic order quantity, quantity discounts, safety stock under uncertainty.

Network models: problem formulation, shortest path problems, maximum flow problems, the critical path method and PERT, maximum spanning tree problems, relationships to linear programming and transportation.

Workshops: Solving mathematical problems, presentation, graphical representation of data.

IT201 Decision Analysis

Four hours per week for fifteen weeks.

A first year subject of the Bachelor of Information Technology course.

Objectives

This unit is designed to familiarise students with a range of statistical, financial and modelling methods commonly used in the decision support area.

Emphasis will be of applying techniques to solve business problems and to present the results using software packages such as LOTUS, SAS, Harvard Presentation Graphics etc.

Syllabus

An introduction to modelling concepts.

Basic statistical ideas such as probability and the combination of probabilities, probability distributions and their applications, statistical measures (mean, variance) introductory time series analysis, linear regression, introduction to simulation.

Statistical applicationsthrough the use of sources of data, data collection and manipulation with packages such as SPSS, SAS.

Financial analysis:

- the concept of interest, present value methods, discounted cash flow,
- internal rates of return.

Throughout the course there will be heavy emphasis on analysis and graphical presentations by using packages such as LOTUS.
IT202 COBOL Programming

Five hours per week for fifteen weeks.

Prerequisite: IT102 Introduction to Programming

A first year subject of the Bachelor of Information Technology course.

Objectives

The aim of this unit is to produce students worthy of immediate hire as COBOL programmers.

By the end of the course, the student will be able to:

- read, understand, modify and debug COBOL programs;
- design, write and document attractive well-structured programs in COBOL;
- describe the main features of 1985 ANSI COBOL.

Syllabus

COBOL fundamentals: COBOL structure, syntax, examples, simple vocabulary (PERFORM, MOVE, ACCEPT, DISPLAY, etc).

Sequential files: review file concepts, tape disk, file verbs.

Arithmetic: ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE.

Moves: numeric, alphanumeric, group, MOVE CORRESPONDING.

Control group: testing strategies, test data, TRACE, EXHIBIT.

Indexed files: physical description of indexed files, VSAM v ISAM.

Tables: REDEFINES, review table concepts, I- dimension tables, II- dimension tables.

Editing: fixed insertion, floating insertion, replacement.


Data validation: IF, ELSE, nested IFs, sign & class tests, range & limit tests, compound statements, 86 levels.

Control group: testing strategies, test data, TRACE, EXHIBIT.

Indexing: physical description of indexed files, VSAM v ISAM.

Random v sequential access.

Cobol fundamentals: COBOL structure, syntax, examples, simple vocabulary (PERFORM, MOVE, ACCEPT, DISPLAY, etc).

Sequential files: review file concepts, tape disk, file verbs.

Arithmetic: ADD, SUBTRACT, MULTIPLY, DIVIDE, COMPUTE.

Moves: numeric, alphanumeric, group, MOVE CORRESPONDING.

Control group: testing strategies, test data, TRACE, EXHIBIT.

Indexed files: physical description of indexed files, VSAM v ISAM.

Random v sequential access.

Environmental Data Structure.

Objectives

The Data Collections and Recording System.

The objective is to be achieved by ensuring that students are able to:

(i) recognise, derive and communicate relevant financial information for decision making.

(ii) recognise those controls necessary to ensure accuracy of data and security of assets in both manual and computerised accounting environments.

Syllabus

Introduction to Business Information Systems.

Accounting Systems and Accounting Reports.

The Data Collections and Recording System.

Balance Sheet Presentation.

Specialised Journals and Subsidiary Ledgers.

Posting Journals to Ledgers.

General Ledgers: Operation and Purpose.

Accounts Receivable.

Introduction to Cash Book Recording.

Bank Reconciliation Statements.

Final reports and Balance Day Adjustments.

IT222 Mathematics

Four hours per week for one semester.

An elective subject of the Bachelor of Information Technology course.

Syllabus

Queueing theory, Markov chains and processes, matrix manipulations, analytical geometry, variance reduction methods and simulation.

Forecasting, scheduling, maintenance and replacement theory, advanced stock control and inventory.

IT301 Systems Software 1

Twenty-seven hours per week for three weeks.

A first year summer semester subject of the Bachelor of Information Technology course.

Objectives

This unit aims to develop an understanding of the fundamental principles of operating systems to promote a more efficient use of the resources provided in the computing environment, and to prepare for more in-depth studies in later systems software units.

Aspects of operating system that impact directly on the user interface will be emphasised in the first industrial placement.

It is expected that part of this unit will involve an orientation program in the operating environment.

Syllabus

Operating system principles: introduction, operating system services, file systems, process scheduling, memory management, virtual memory, storage system scheduling, deadlocks, job and task management, protection.

Systems programming: system utilities, backup and recovery, command procedures and JCL, package implementation, security systems, job entry subsystems, resource management.
IT302 Organisation Behaviour
Twenty-one hours per week for three weeks

A first year summer semester subject of the Bachelor of Information Technology course.

Objectives
1. To give students an understanding of current issues and research in organisational behaviour and the conceptual and methodological considerations which apply to this field of study.
2. To give students a better understanding of themselves, their impact on other people, and the way other people influence their own behaviour.
3. To allow students to experience the satisfaction and difficulties inherent in working in groups, to improve their skills as team members and team leaders, and to be able to explain the nature of their experience in groups in terms of other theories.
4. To give students practice in interpreting and explaining complex organisational behavioural situations in terms of current theories and concepts.
5. To prepare students to interpret and understand the behavioural environment of their employing organisation and of their own role within it.

Syllabus
Investigating politics; organisational change; conflict; making; dynamics within; groups; dynamics between groups.

IT303 Data Base Management Systems 1
Twenty-seven hours per week for three weeks

Prerequisites: IT202 COBOL Programming IT203 Business Applications and Systems 2

A first year summer semester of the Bachelor of Information Technology course.

Objectives
This unit will run in the summer term and will be an intensive hands-on course to enable students to learn how a DBMS is used in the development of systems. Although the advantage and impact of the data base approach will be covered, the main emphasis will be on logical design and the use of software to define, maintain and use the data bases.

Towards the end of the unit a range of different DBMS products will be surveyed in preparation for the different software environments that the students will encounter in their first Industry Based Learning segment.

Syllabus
Introduction: what is a data base, the need for the data base, data dictionaries.
Logical Design: data analysis, data modelling, normalization, design tools.
Physical Data Organisation: hardware, data structures, access methods.
DBMS Models: Relational, Network, Hierarchical.
Practical work involving the definition, loading and accessing of data bases will be done on one relational and one non-relational system.

Current DBMS's: this will involve a comparative study of the major Data Base Management Systems in current use. Particular emphasis will be placed on systems that the student will encounter in their Industry Based Learning segments.

IT322 Mathematics

Syllabus

IT401 Industry Based Learning
Twenty weeks full-time project work in industry.
Prerequisite: satisfactory completion of the subjects of the first three segments.

A second year segment of the Bachelor of Information Technology course.

Objectives
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 a wider understanding of the information flows within the business and industry. To address issues which can better be learned from within the industrial environment — such as user liaison and systems security.

Syllabus
Students will work under supervision by both Industrial Sponsor and Student Manager.

Students will be expected to gain experience in the following areas: programming, Systems Design, Planning, Control, Operational; Scope; Corporate; divisional, local, Corporate Data Modelling Techniques. Selecting the Modelling approach.

IT502 Systems Software 2
Five hours per week for fifteen weeks
Prerequisite IT301 Systems Software 1

A second year subject of the Bachelor of Information Technology course.

Objectives
The aim of this unit is 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 will be studied so as to examine the inter-relationship between systems software and the computer’s architecture. The role of the systems programmer as distinct from the applications programmer will be considered.
Faculty of Applied Science

IT503 Data Base Management Systems 2
Five hours per week for fifteen weeks

A second year subject of the Bachelor of Information Technology course.

Objectives
This unit aims to build upon the concepts and techniques learned in DBMS 1. Logical Design concepts are expanded by a formal study of relational theory and normalisation to enable students to understand the development of the field. Implementation and physical design skills are enhanced by an examination of the factors affecting performance.

Syllabus

IT504 Data Communications 1
Five hours per week for fifteen weeks

A second year subject of the Bachelor of Information Technology course.

Objectives
Computer communications systems are concerned with the processing and the communication of information between distributed communities of electronic digital equipment.

This unit aims to familiarise the student with the basic concepts, terminology and jargon of the area. Standards, as developed by the International Standards Organisation (ISO) and IBM are emphasised to give the student a sound basis for understanding the dramatic developments in this area.

Syllabus
Introduction, historical developments, data transmission, ISO, link-level protocols, the electrical interface, RS-232, terminal based networks, computer networks, IBM and Telecom.

IT505 Knowledge Engineering
Five hours per week for fifteen weeks

An optional second year subject of the Bachelor of Information Technology course.

Objectives
At the end of this unit the student will be able to:
- explain what expert systems are, how they developed and who is using them;
- discuss how expert systems differ from conventional software programs, laboratory artificial intelligence programs in particular and human beings who perform tasks expertly;
- explain the basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- an the architectural development of expert systems, including specific design issues for tasks of a specific type;
- examine the evolutionary process of knowledge acquisition and knowledge acquisition needed to put expertise into a machine;
- analyse the comparative strengths and weaknesses of existing knowledge engineering tools by using different techniques on an "identical" problem;
- discuss the pitfalls and opportunities that arise from the important need to evaluate artificial expertise.

Syllabus
Role of artificial intelligence (AI) developments in business computing — what is AI, who uses it today, what it has produced so far, why the business and industry world is interested in it.

Knowledge engineering, problems of extracting expert knowledge, iterative development of expert systems.

Categories of expert systems: evidence gathering, stepwise refinement, stepwise assembly.

Knowledge representation: rule based, logic or example based, frame based representation in reasoning.

General shell of expert systems. Assistant, colleague, expert. Process of building an expert system — task definition, initial design, knowledge extraction, technology transfer, use of expert system shells, evaluation and selection of appropriate shells for specific problem types.

Expert systems in use in financial services, finance, and administration, manufacturing, engineering, sales and marketing, data processing and MIS, field service and education.

Hardware and data base implications of expert system applications, including fifth generation hardware, management and social issues.

IT506 Expert Systems
Five hours per week for fifteen weeks

Prerequisite, IT505 Knowledge Engineering

An optional second year subject of the Bachelor of Information Technology course.

Objectives
- enable students to:
  - select appropriate tools to apply to a commercial problem from a range including object oriented languages (eg. LISP, PROLOG), microcomputer based expert systems shells (eg. ES-Expert, Gemini mainframe based expert system shells (eg. IBM's ES, Ellington's Application Expert), or Expert System Languages (eg. ILOG's XL);
  - develop control strategies, explanations and user interface via LISP, PROLOG and ILOG's XL;
  - discuss strategies of supervising the development of expert systems.

Syllabus
The range of tools available to build expert systems. These include conventional programming languages, object oriented languages, microcomputer based expert system shells, specialised expert system languages not classified as shells. This section also involves evaluation of specialised hardware such as workstations and graphics facilities. Logic programming: LISP, PROLOG to derive rules and a knowledge base for entry into an expert system shell. It will also cover applicability of deductive database systems, inadequacy of deductive methods, drawing conclusions from uncertain data, absence of user-specified control.

Control strategies. Rule and frame based reasoning, fuzzy logic, user communication, statistic gathering and language representations of these in PROLOG, LISP and XL.

Managing expert systems development. Project planning, analysis incorporating knowledge acquisition strategies, design, implementation, verification and performance evaluation.

IT507 Computer Graphics & Imaging
Five hours per week for fifteen weeks

Prerequisite, IT222 Mathematics

An optional second year subject of the Bachelor of Information Technology course.

Objectives
This unit aims to introduce the fundamental concepts of computer graphics. The emphasis will be on the programming techniques that are involved in producing computer graphic images.

Syllabus
Introduction, definition of graphics, range of applications.

Graphics hardware, display devices, hardcopy, input devices.

Two dimensional graphics primitives. Two dimensional object transformations, matrix representation, composite transformations.

Windowing & clipping. Object transformation, lists, segmentation.
IT508 Systems Performance
Five hours per week for fifteen weeks
Prerequisites IT222 Mathematics
An optional second year subject of the Bachelor of Information Technology course.

Syllabus
This unit addresses the problems associated with achieving effective performance efficiency in large computer systems. The emphasis will be on hardware and software monitors, the interpretation of their output, system tuning parameters and system performance models. The practical application of tuning techniques in large scale mainframe systems and networks will be emphasised.

IT509 Software Engineering 1
Five hours per week for fifteen weeks
An optional second year subject of the Bachelor of Information Technology course.

Objectives
The unit aims to achieve an understanding of the basic problems which are encountered in the development of computer software and the current tools and techniques which are used by industry to overcome these problems.

Students will be expected to apply these techniques to their own software projects to develop an ability to participate as a successful member of a software project team.

Syllabus
The software life cycle: an introduction to the concepts of requirements definition, software specification, software design, programming practice, testing and debugging, documentation and maintenance of the user interface.

IT601 Systems and Information Analysis 2
Five hours per week for fifteen weeks
Prerequisite, IT501 Systems and Information Analysis 1
An optional third year subject of the Bachelor of Information Technology course.

Objectives
This unit will build on the technical knowledge gained in earlier units and provide students with an understanding of the various ways in which the total corporate computing environment can be designed to meet corporate information needs and support corporate goals.

At the end of the course the student will be able to:
- understand the way that managers think and work and the need for computer systems to improve their effectiveness in decision making;
- justify the need for careful analysis, risk assessment and control procedures suitable for different systems development approaches;
- describe the methodologies in use in organisations and to determine the correct development approach for different systems;
- understand the need for different approach to computer systems development to ensure that corporate information needs are met and computing productivity is maximised.

Syllabus
Information Systems Theory — information needs of management, impact of information systems on strategic corporate plans.
Traditional Life Cycle development.
Fact finding.
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.
Prototyping — 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.

IT602 Systems Software 3
Five hours per week for fifteen weeks
Prerequisite, IT301 Systems Software 1
An optional third year subject of the Bachelor of Information Technology course.

Objectives
The aim of this unit is to make an in-depth study of an operating system such as PICK and/or UNIX which is hardware independent.

The architecture of the operating system will be examined to discover what features lead to its portability and what costs portability is achieved. The high level language, appropriate for the particular operating system, will be studied so as to examine the relationship between systems software and the operating system's architecture.

Syllabus
Architecture: history, operating system model, host dependent features, methods of portability, device interface. File systems, command language, the user interface, functionality of the operating system.

Systems programming: an examination of the programming language which directly accesses the operating system functions such as C for UNIX or PICK/BASIC for PICK. Device drivers.

Systems administration: system generation, user control, security.

IT603 Data Management Systems 3
Five hours per week for fifteen weeks
An optional third year subject of the Bachelor of Information Technology course.

Syllabus
This unit completes the study of database management systems of units DBMS 1 & 2. The topics studied in this unit are:
- database recovery;
- database integrity;
- concurrency;
- database security;
- distributed databases;
- special purpose database machines.

IT604 Data Communications 2
Five hours per week for fifteen weeks
Prerequisite, IT502 Mathematics and IT504 Data Communications 1
An optional third year subject of the Bachelor of Information Technology course.

Objectives
This unit builds on the foundations laid by Data Communications 1.

The aim is to produce people with an understanding of the issues involved in the design of computer networks and selection of communications equipment.

Syllabus
The ISO reference model and its relationship with IBM's SNA, Wide and Local area network software and user perspectives, satellite and within networks, Network analysis, Telstra's offerings — and rationales for pricing structure.

Topics covered will be guided by student interest.

IT606 Artificial Intelligence
Five hours per week for fifteen weeks
Prerequisite, IT505 Knowledge Engineering
An optional third year subject of the Bachelor of Information Technology course.

Objectives
At the end of this unit the student should be able to:
- discuss knowledge representation and a variety of rules and frames, in a variety of circumstances, other appropriate data structures and devise appropriate search strategies;
- discuss a number of reasoning (inference) systems, their advantages and drawbacks;
- known the state-of-the-art research in vision systems, natural language and self-learning systems.

Syllabus
Knowledge acquisition, based upon the Buchanan model of identification, conceptualisation, formalisation, implementation and testing. Advanced knowledge representation, including frames, semantic nets, rules, rule/frames combinations, structured object representation. Explanations, using existing expert systems such as XPLAIN. Current research areas in Artificial Intelligence with particular reference to Fifth Generation. These include vision, digital image processing, natural language, pattern matching, dialogue phenomena, self-learning, learning from examples.
IT607 Computer Graphics and Imaging 2

Five hours per week for fifteen weeks
Prerequisite: IT606 Computer Imaging and Graphics
An optional third year subject of the Bachelor of Information Technology course.

Objectives
This unit builds on the work already done in Computer Graphics and Imaging 1, by extending the study into three dimensional graphics work and by providing an in-depth examination of advanced application areas, such as computer animation, CAD and Computer Imaging.

Syllabus

IT609 Software Engineering 2

Five hours per week for fifteen weeks
Prerequisite: Software Engineering 1
An optional third year subject of the Bachelor of Information Technology course.

Objectives
This unit aims to develop in more detail some of the basic notions of software life cycle as studied in Software Engineering 1. A greater emphasis will be placed upon the formal methods available to software engineers and their use in large software projects. Students should be able to apply their understanding to the development of modern software systems and become fully participating members of software project teams.

Syllabus

IT701 Industry Based Learning 2

Twenty weeks full-time project work in industry
Prerequisite: satisfactory completion of the subjects of the first six segments of the course

Objectives
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.

Syllabus
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.

IT802 Seminars and Project Management and Control

Ten hours per week for nine weeks
Prerequisite: satisfactory completion of Segments one to seven
A subject of the final summer semester of the course.

Objectives
To provide students with a capstone series building on and rounding out the studies of the course.
To present the latest developments and trends in the data processing industry.

Syllabus
Students will attend a series of seminars, ranging from a half day to a several week sequence, covering selected topics such as: Consultancy and training, Leadership, Industrial Relations, User Liaison Strategies, Computers and the Law, Security controls and audit, Technology and Innovation, Technology and Society. Current Issues in Systems Management.

ME249 Environmental Engineering

Four hours per week for one semester
A second-year subject of the degree course in environmental health.

Part A: Mechanical engineering plant (30 hours)
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, CO, CO2 and C03 tests. Recognition and analysis of problems, reports and recommendations, maintenance of records.

Part B: Vibration/acoustics (30 hours)
Theory and practice of vibration and noise control applied to equipment and plant including ventilation systems and for noise emission and control.

ME448 Occupational Engineering

Four hours per week for one semester
A fourth-year subject of the degree course in environmental health. Systems approach to problem-solving.
Work space design; including heat stress, ventilation, noise, lighting, fumes, vibration and acceleration (revision of relevant features of human anatomy).
Job design; including motivation, job enrichment, memory loads, decision-making, interpersonal communication, organisational structure and stress.

MP107 Engineering Drawing & Sketching

Two hours per week for one semester
Drawing exercises to develop and use skills to illustrate typical details of equipment, plant and structures.
Faculty of Art
Dean
To be appointed.
Director, Computer Image Program
PG. Brown, BA(Hons), HIFA(Lond)

Academic staff
Department of Film and Television
Head
J. Sabine, BA(ANU)
Senior Lecturers
J.E. Bird, DipArt(SIT), TTTC
C. McGill
P. Tammer, BA(Melb)
Lecturers
D. Atkinson, DipArt(SIT)
N. Bell
H. Burton, BED(MSC)
N. Ghararian, GradDipArt(AppF&TV)(SIT)
D. Price, BArch(RMIT)

Department of Graphic Design
Head
D.G. Murray, BA(Graphic Design)(SIT), TTTC
Principal Lecturer
C.J. Austin, BA(Graphic Design)(SIT)
Senior Lecturers
J. Bassani, DipArt & Design(Prahran), GradDipEd
S. Huxley, DipArt & Design(Bristol), CGLI CertPictGraphics
1 and 2(London) GradDipEd
R. Graham, AssocDipArt(RMIT), TTTC
Lecturers
P.E. Blair, DipArt(Graphic Design)(RMIT), GradDipEd
D. Bryans, BA(Graphic Design)(SIT), DipEd
C.E. Condell, BA(Graphic Design)(SIT)
P.J. Jeffs, DipArt(Phillip)
H. Lueckenhausen, GradDip(Industrial Design)(RMIT), DipEd
B.A. Newbound, CertPrint
T. Street, BA(Graphic Design)(SIT), CATD(London)
D.M. Whitehouse, ALAA, BAHons(LaTrobe), MA

Principal Tutor
P. Gajree, DipEd, FIIP

Art courses offered
Full-time courses in the Faculty of Art are offered as follows:

Department of Film and Television
Bachelor of Arts (Film and Television)
Graduate Diploma in Film and Television

Department of Graphic Design
Diploma of Art (Graphic Design)
Bachelor of Arts (Graphic Design)

Assessment
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. A Faculty Pass may be awarded in the event of failure in one theory subject. This allows a student to progress to the next stage/year of the course. However, the failed theory subject, or its equivalent, must subsequently be completed satisfactorily, in addition to all other subjects, in order to meet the requirements for the award of a diploma or degree. If the subject or subjects are not completed successfully within two years, the complete set of final examinations must be attempted again.

Examinations
Students must enter for all subjects in a particular year of the course except where an exemption has been approved or electives offered.

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.

F050 Bachelor of Arts (Film and Television)
3 years full-time

Aims and objectives
1. To provide training to a professional level for creative people who envisage working in the film and television program production industry.
2. To facilitate the production by students of short film and video programs of a high creative, technical and artistic standard.
3. To place emphasis on script writing, production management, directing, sound, lighting/camera and editing studies, leading to specialisation in one or more of these aspects by the final year of the course.

Entrance requirements
There are no prerequisite subjects.
Year 12 previously accredited by VISE: Recommended Group 1 subject: English
All Group 2 subjects will be considered.

Victorian Certificate of Education (Tertiary Orientation Program): All students who have successfully completed a VCE(TOP) course will be considered.

Applications for second and higher years must be made direct to Swinburne.

Applicants are initially required to undertake tests set each year by the Selection Officer.
1. Write a script for a short film or video program on a dramatic theme, and
2. Complete a sequence of images illustrating a dramatic theme by predominantly visual means.

Following the assessment of the tests, selected applicants are to attend an interview where they are required to:
1. Present examples of their creative work.
2. Demonstrate an awareness of the contents and requirements of the course.
3. Provide academic reports.

Tests and interviews are conducted from October to December of each year to qualify for entry. All applicants who specify an art course, either graphic design or film and television at this Institute, must follow carefully the procedure for enrolment, which is given with dates and other details in the Victorian Tertiary Admissions Centre publication, Guide to Courseesin Colleges and Universities. This is published in September, 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.

Eligibility
Applicants are initially required to undertake tests set each year by the Selection Officer.
1. Write a script for a short film or video program on a dramatic theme, and
2. Complete a sequence of images illustrating a dramatic theme by predominantly visual means.

Following the assessment of the tests, selected applicants are to attend an interview where they are required to:
1. Present examples of their creative work.
2. Demonstrate an awareness of the contents and requirements of the course.
3. Provide academic reports.

Selection tests and interviews are conducted from September to November each year.
Applicants usually will have taken a first degree or diploma in any discipline; in other words they need not have studied film or television seriously. They should have, however, developed some expertise in the field of science, fine art or the arts, as it is usual to draw upon this knowledge when devising program content. However, there does not have to be an absolute connection between what a person has done in the past and what they propose to do in the future.
A small number of 'mature-age entry' applicants, who are not graduates, may be admitted if they have had substantial industrial experience.

Those applying for the animation stream must have proven graphic ability.

Quotas
Video 8
Film 8
Animation 8

In the three areas of specialisation offered, it is not possible to transfer from one stream to another.

Course structure

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>First year</td>
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<td>First semester (seventeen weeks)</td>
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<tr>
<td>RF150</td>
<td>Assigned Projects 1</td>
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<tr>
<td>RF160</td>
<td>History of Cinema 1</td>
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<tr>
<td>RF140</td>
<td>Script Writing 1</td>
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<tr>
<td>Second semester (seventeen weeks)</td>
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<td>RF150</td>
<td>Assigned Projects 1</td>
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<td>RF170</td>
<td>Result of Studies 1</td>
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<table>
<thead>
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<th>Semester</th>
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<tbody>
<tr>
<td>Second year</td>
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<td>First semester (seventeen weeks)</td>
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<tr>
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<td>RF260</td>
<td>History of Cinema 2</td>
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<td>RF240</td>
<td>Script Writing 2</td>
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</tr>
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<td>Result of Studies 2</td>
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<table>
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<tr>
<th>Semester</th>
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<tr>
<td>Third year</td>
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<td>First semester (seventeen weeks)</td>
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<tr>
<td>RF350</td>
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<tr>
<td>RF360</td>
<td>History of Cinema 3</td>
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<tr>
<td>RF330</td>
<td>Methods of Production</td>
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<tr>
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<td>Assigned Projects 3</td>
</tr>
<tr>
<td>RF370</td>
<td>Result of Studies 3</td>
</tr>
</tbody>
</table>

Results are published for each subject and for the year as a whole. Result of Studies is not a subject but a clear-cut decision on each student's success or otherwise in the year's studies as a whole.

Graduate Diploma in Film and Television

1 year full-time

This course is offered to graduates who want to make objective use of film, television or animation production skills.

Aims and objectives
1. To provide practical training in short program production to a professional level in film or video or animation.
2. To provide training that would aid creative people to gain employment in the film and/or television industries.
3. To facilitate the production by students of short programs of a high technical and artistic standard.

Eligibility
Applicants are initially required to undertake tests set each year by the Selection Officer.
1. Write a script for a short film or video program on a dramatic theme, and
2. Complete a sequence of images illustrating a dramatic theme by predominantly visual means.

Following the assessment of the tests, selected applicants are to attend an interview where they are required to:
1. Present examples of their creative work.
2. Demonstrate an awareness of the contents and requirements of the course.
3. Provide academic reports.

Selection tests and interviews are conducted from September to November each year.
Applicants usually will have taken a first degree or diploma in any discipline; in other words they need not have studied film or television seriously. They should have, however, developed some expertise in the field of science, fine art or the arts, as it is usual to draw upon this knowledge when devising program content. However, there does not have to be an absolute connection between what a person has done in the past and what they propose to do in the future.
A small number of 'mature-age entry' applicants, who are not graduates, may be admitted if they have had substantial industrial experience.

Those applying for the animation stream must have proven graphic ability.

Quotas
Video 8
Film 8
Animation 8

In the three areas of specialisation offered, it is not possible to transfer from one stream to another.

Course structure

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<thead>
<tr>
<th>Semester</th>
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<td>RF450</td>
<td>Assigned Projects (2 semesters)</td>
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<tr>
<td>RF470</td>
<td>Result of studies</td>
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</tbody>
</table>

Resources
Swinburne provides all usual equipment and assists with production costs. Budget expenditure is determined by the individual student subject to departmental approval.
Closed circuit colour television, 16mm film and animation equipment are provided.

Application forms
These are available from the Secretary, Department of Film and Television, and must be returned by the date specified thereon. Telephone 819 8328.

Diploma of Art (Graphic Design)

G020 First and second years
G040 Third year

3 years full-time

The aim of the diploma course is to train designers to work effectively in areas where information is conveyed by visual means, such as advertising, publishing, publicity, printing, merchandising, education and some research projects. The course is planned to produce imaginative designers who, with specialisation and experience in industry, should achieve positions commensurate with their individual talents.
The first two years of the course are common to each of the diploma/degree streams but in the final diploma year, a number of special bias studies are offered, including photography, three-dimensional design, audio-visual production design and the use of computer-based production techniques.

**Entrance requirements**

There are no specific prerequisite subjects.

- **VCE(HSC):** recommended Group 1 subjects: English, art and art-related subjects.
- **VCE(TOP):** all students who have successfully completed this course will be considered.

No preference is given to either of the above qualifications.

The aim of the degree course is to meet the present and future needs of industry, and to train people with a high degree of creative ability for positions of administrative responsibility in the areas of design and production of printing, publishing, computer-based production techniques, advertising, education and information design.

At the completion of the second year, students are selected for the degree course. They are required to spend the whole of the third year working in an industrial situation organised by Swinburne. This arrangement conforms to the Y structure under the cooperative education system. This third year enables the student to begin professional practice and is supervised by senior staff.

During the year in industry, students are required to attend the Institute for two sessions per week for theoretical subjects: Print Technology and Psychology.

In the final year, in addition to Assigned Projects 4, Design Management is studied at Swinburne.

**1 Year Degree Conversion**

Diploma students who achieve a credit pass are eligible to apply for degree conversion.

This means they will spend the fourth year in the Swinburne Design Centre undertaking Professional Commissions from industry as well as studying Design Management.

**Course structure**

**G020 **First and second years

**G050 **Third and fourth years

**G060 **Fourth year conversion diploma/degree

4 years cooperative

### Bachelor of Arts (Graphic Design)

**G020 First and second years**

- **G050 Third and fourth years**
- **G060 Fourth year conversion diploma/degree**

#### First year

- **RG101** Assigned Projects 1
- **RG111** History of Arts 1
- **AB212** Applied Writing
- **AB321** Media
- **TS194** Typewriter and Computer Keyboard Techniques
- **RG410** *Result of Studies* 1

**Semester hours** 340

#### Second year

- **RG201** Assigned Projects 2
- **RG321** History of Arts 2
- **AB222** Psychology
- **AB321** Media
- **RG240** *Result of Studies* 2

**Semester hours** 340

#### Third year

- **RG301** Assigned Projects 3
- **RG322** Print Technology
- **AB322** Applied Psychology
- **RG340** *Result of Studies* 3

**Semester hours** 340

Note: Results will be published for each subject and for the year as a whole.

*Result of Studies is not a subject, but is a clear-cut decision on the student's total success or otherwise in the year's studies (see under 'Assessment').
Explanation of course structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree (cooperative)</th>
<th>Degree (conversion)</th>
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</tbody>
</table>

Entry

VCE (HSC) or equivalent

Full-time study at Swinburne

Experience in industry or professional practice

Distinction between diploma and degree courses

The diploma stream is for a student with specific abilities, i.e., as an executant working to specific briefs and producing work of a unique and individual character.

The degree course requires a student to have a greater ability in conceptual thinking, together with proven abilities in handling complex problems in visual communication. Maturity, responsibility, leadership, planning, and organisational skills are expected but not necessarily unique technical skills of a high order.

Scholarships and awards

The AAV Australia Pty Ltd J. Robert Fine Memorial Scholarship of $5,000

DDB Needham Scholarship of $250

Two Foote, Cone & Belding Scholarships of $250 each

Film Victoria John Harrison Script Prize of $1,000

Kodak Script Prize of $1,000

Filmhouse Scholarship of $1,500

Kodak Australasia Pty Ltd, $1,000

Best Achievement in Cinematography

Kodak Australasia Pty Ltd, $1,000

Best Achievement in Animation

Victorian Film Laboratories, $500

Best Production in Film

Melbourne Screen and Theatre Guild, $500

Best Achievement in Direction, Film

Australian Film Commission, $1,000

Best Achievement in Screenplay

Soundfirm Pty. Ltd., $500

Best Achievement in Sound

Crawford Productions, $500

Best Production in Video

Mike Reed’s Post Production, $750

Best Achievement in Editing

HANIMEX: Stock Valued at $1,000

Best Achievement in Direction, Video

HANIMEX: Stock Valued at $1,000

Best Achievement in Documentary Film

1988 GRAPHIC DESIGN STUDENT AWARDS

All years — Maurice Cantlon Memorial Drawing Prize, $300

Final year — 3M Australia Award

For Best Corporate Promotional Design Project, $500

1st year — Adpack Award

For the most innovative student, $500

Margery Withers Scholarship, $200

Tomasetti Award, $1,000

Year 2 — Agfa Award, $500

Pak Pacific Award

For the most innovative student, $500

Year 3 — CPI Papers Award, $500

Emery Vincent Associates Award, $500

APM-Papers Award

For the most innovative student, $1,000

Year 4: Conversion — Flett Henderson Arnold Award, $500

Year 4: Cooperative — Flett Henderson Arnold Award, $500

Year 4: Combined — APM-Cartonboards Award

For the most innovative student, $1,000

Bachelor of Arts (Film and Television) subject details

First year

RF140 Script Writing 1

Four hours per week in first semester

Prerequisites, nil

Assessment is continuous

Through lectures, discussions and the screening and analysis of moving pictures, the students examine the relationship of moving pictures to the broad spectrum of fine and performing arts in order that the inherent advantages and limitations of the moving picture media may be appreciated. The potentialities available to the screenwriter through manipulation of image, movement, time and sound are examined closely as is characterisation, and the function of conflict, plot and genre. A series of short writing exercises is undertaken. These matters occupy the first eight classes.

Also commencing in week four and continuing for the balance of the first semester, each student undertakes the writing of a script suitable for production in the second semester. Progress is monitored at tutorials.

RF150 Assigned Projects 1

Sixteen hours per week in first semester

Twenty-four hours per week in second semester

Prerequisites, nil

Assessment is continuous

In the first semester, lectures, demonstrations and tutorials in video production techniques and technology lead to short practical exercises including a production undertaken on location. Working in crews and rotating roles, each student experiences the responsibilities of script writing, directing, production management, sound recording and post-production, camera operation, lighting, art direction, continuity, videolapse operation and editing.

In the second semester each student directs and edits a short video production that they have scripted in the first semester. The students form crews for these productions.

The aim throughout is to facilitate the production of student programs of a high artistic and technical standard.
RF160 History of Cinema 1
Four hours per week in first semester
Prerequisite, nil
Assessment is continuous
History of Cinema 1 is an introductory course on the development of narrative, its codes, conventions and structures from the silent era to contemporary cinema. The films selected cover a broad and diverse range of cinematic approaches and styles, and include examples of films that adopt an approach to narrative which deliberately undermines or alters the conventional strategies of the cinema. The course will introduce notions such as realism, the construction of ideology and the editing process between A/B/silver and the use of a detailed account of cinematic technique. The course aims to provide students with a cultural and critical overview of the cinema to complement their work in film and television production.

Second year

RF240 Script Writing 2
Four hours per week in first semester
Prerequisite, AR170 Result of Studies 1
Assessment is continuous
Lectures cover the basic principles of dramatic structure and deal with the elements of story, plot, conflict, character design, dynamic action, context and business, imagery, movement, time and sequence, climax and resolution. The aim then is for each student at the end of a four-week period to have written an innovative script which will be the blueprint for the major film component of Assigned Projects. The script should be vivid, engaging, and distinctive characters, a crisp and setting, have a strong narrative based in a fictional world in form and content.

RF250 Assigned Projects 2
Sixteen hours per week in first semester
Lectures and tutorials in second semester
Prerequisite, AR170 Result of Studies 1
Assessment is continuous
During the first semester students undertake introductory studies in film technology and production covering lighting, camera operation, and the relationship between the medium before embarking on more complex group productions. They change their crewing roles from production to post-production to familiarize them with the major functions of a film crew. By the end of the second semester each student will have completed the production of a major project.

RF260 History of Cinema 2
Sixty-eight hours during first and second semesters
Prerequisite, AR170 Result of Studies 1
Assessment is continuous
History of Cinema 2 is designed to elaborate on the issues raised in first year through a study of the documentary form and questions of genre, complementing the production work undertaken by students. The course will examine documentary film, its history and its present status. It will explore the relationship between fiction and non-fiction, the problem of truth and authenticity, and the relationship between form and technological change. This will lead into a discussion of genre. The investigative thriller and the horror film will form the basis for this. Two strands of the course will be the examination of the impact of contemporary cinema in particular feminism and structuralism, and the impact of women’s film-making on both the short and the feature film. In this strand, students will critically interrogate contemporary genre films and the representation of sexuality, violence, race and cultural and social milieu.

Subsequently, master classes are conducted by specialists from industry in subjects such as prosthetics and unconventional make-up, sound recording, front projection, film editing, lighting and cinematography. Students select and research a production area or special interest area to them. Each student presents a thirty-minute lecture followed by a thirty-minute discussion on his or her selected topic. Subsequently they each refine their information into a 2000-word essay.

RF350 Assigned Projects 3
Sixteen hours per week in first semester
Twenty-four hours per week in second semester
Prerequisite, AR270 Result of Studies 2
Assessment is continuous
During the first semester technical and conceptual program production skills are broadened and deepened through lectures, discussions, tutorials, demonstrations, excursions and moving pictures viewing and analysis. Guest lecturers from the film and television industry participate in this process. Concurrently each student undertakes the script writing for a program of not more than twenty minutes duration, suitable for production in the second semester. Students attend script writing lectures and tutorials. Actual writing takes place outside of class time. Scripts that demonstrate a high level of creativity and narrative power, as judged by a panel of staff, are put into production. The second semester is devoted entirely to program production with the students working for one another. Specialization in directing, cameralighting, sound, production management and editing is encouraged.

RF360 History of Cinema 3
Four hours per week in first semester
Prerequisite, AR270 Result of Studies 2
Assessment is continuous
History of Cinema 3 aims to provide students with a wide-ranging account of the development of the Australian cinema over the past 50 years. By examining the films themselves, institutional and political factors such as the Hollywood factor, Film C, and the taxation in the home market, students develop an understanding of the changing relationship between the production industry and the government funding distribution and exhibition practices in the industry. Students will gain an overview of the Australian cinema within a broader context with reference to other European cinemas, art cinema and American structures.

Film and Television graduate diploma subject details

RF450 Assigned Projects
Twenty-four hours per week for two semesters
Prerequisite, nil
Assessment is continuous

Students admitted to the Graduate Diploma in Applied Film and Television Studies are required to complete a major project. Each student undertakes the script writing of a major project to be produced in the second semester. During this phase of writing their progress is monitored at tutorials.

Production techniques
Twenty hours per week for seventeen weeks
Lectures, demonstrations, screenings, and discussions.

The intent of these sessions is to impart practical program production skills to animation, film and video students, respectively.
Faculty of Art

Semester 2

Production
Twenty-four hours per week for seventeen weeks
During second semester students work on their major productions. This involves a considerable amount of work outside of the scheduled twenty-four hours per week, including evenings and weekends.

Graphic Design diploma/degree subject details

First year

A6121 Applied Writing
Two hours per week for one semester
Assessment is continuous, based on class participation and practical work.
A first-year subject for all graphic design students. The course is designed to develop formal and creative writing skills appropriate to the expression of ideas, and writing techniques employed in, applied areas, such as copy writing, design rationales and publications.

TB215 Media
Two hours per week for two semesters
Prerequisite, first year – nil, second year – continuing subject
Assessment is continuous
This subject is taken in the second semester of the first year and continued in the first semester of the second year.
In this subject, the aim is to expand graphic artists’ range of communication media relevant to their profession. It includes examination and discussion on techniques of present-day media: film, TV and video, radio, theatre, newspapers, publishing and other print media.
Specialist topics covered include: media ownership, news reporting and current affairs interviews, children’s TV and cross-media coverage of world events.
The course provides opportunities for creative media expression and ‘hands-on’ practice with media tools.
There is also a major assignment involving consistent monitoring of current media programs.

RG101 Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite, nil
Assessment is continuous
Assigned projects refer to a coordinated three-year work program with specific emphasis on an individual creative approach to solving communication problems principally of a graphic nature. Students are encouraged to develop their own personal style through soundly-reasoned, skillfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group projects also allow students to develop a broader understanding of the communication problems faced by others, particularly in other areas of study.
A sequential program of applied design and practice is directed at developing a general awareness of aspects of students' environment and facility for critical objective analysis.
Specific study areas include:

Design
The objective is to equip students with a 'design vocabulary' to allow creative expression in a variety of 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 in a broad range of communication problems.

Photography
A comprehensive introduction to still-photography as a creative medium aimed at cultivating visual awareness through study of controlled lighting, spatial relationships, form, product and fashion photography, photojournalism, photo-reproduction techniques (e.g. developing and printing), pictorial editing, various colour processes and colouring.

Design for print
Introduction to a comprehensive study over the three years of the course, which includes introduction to lettering, typographic and symbol design, illustration, and all aspects of production with particular emphasis on experimental work in offset lithography and screen printing.

Drawing
Expanding vision through assignments which develop control of drawing as a discipline for research and invention. Subject matter includes the figure, perspective, object drawing and natural forms.

Textbooks
Students are advised not to purchase textbooks or references until classes commence.

RG111 History of Arts 1
Two hours per week for two semesters
Prerequisite, nil
Assessment is continuous
A course of study planned to create an awareness and appreciation of a variety of art forms in selected periods and to provide a background for communication arts.

TS194 Typewriter and Computer Keyboard Techniques
Three hours per week for one semester
Assessment is continuous, based on a series of test exercises
A course of one semester duration, designed specifically for basic and accurate keyboard familiarity to facilitate organised written assignment work, and later conversion to the word processing and computer photo-setting systems used in the second and third years of the course.

Second year

AB222 Psychology
Two hours per week for one semester
Assessment is continuous
A general introductory course in psychology providing a background to Applied Psychology in the third year.
Apart from specific study of the basic psychology text, class activities focus on experiential learning. To this end an active participation in seminar-type discussions is required. These sessions will deal with self-awareness as a basis to communication, communication skills, assertiveness training, the use of relevant learning theories in modifying behaviour and psychological factors relevant to personal growth and development such as relaxation, nutrition and stress-reduction.

Textbook
Avery, D. and Baier, E. Psychology at Work. Sydney: Prentice-Hall, 1984

RG201 Assigned Projects 2
Twenty hours practical per week for two semesters
Prerequisite, RG140 Result of Studies 1
Assessment is continuous
This program constitutes a bridge between the formative studies of the first year and the closely-applied studies of third year. The aim of the second year is to bring the student to a professional standard of competence in the illustrative, typographic, written and oral presentation of ideas, in the arrangement of sequential information-embracing publishing, advertising, sales promotion, merchandising and public relations, also for non-commercial areas such as education and community organisations. Study areas include design, photography, methods of production, typography, history of arts and psychology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.

RG211 History of Arts 2
Two hours per week for two semesters
Prerequisite, RG140 Result of Studies 1
Assessment is continuous
A study of the influences within the arts in contemporary society including aspects of stylistic development within the graphic arts.
Diploma in Graphic Design

Third year

A6322 Applied Psychology
Two hours per week for two semesters
Prerequisite: RG240 Result of Studies
Assessment is continuous

A third-year diploma subject which aims to increase personal and social skills through the study of communications. This will include learning models, assertiveness training, stress management and sensory and interpersonal perception.

References
Reading and other resources will be given where appropriate.

RG301 Assigned Projects 3
Twenty hours per week for two semesters
Prerequisite: RG240 Result of Studies
Assessment is continuous

The year is encouraged to move towards one of the studies at the aim of producing solutions to complex problems in 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, three-dimensional design, audio-visual and publication design.

RG322 Print Technology
Two hours per week for one semester
Prerequisite: RG240 Result of Studies
Assessment is continuous

Advanced studies of photo-mechanical and direct-printing procedures. Photo-engraving, letterpress, offset lithography, rotogravure, silk-screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression and digitised photo-typesetting, for book, advertising and display typography. Cost estimating, mechanical art procedures, production control, paper consideration. Visits to production houses are arranged.

Degree in Graphic Design

Third year

A6322 Applied Psychology
Two hours per week for two semesters
Prerequisite: RG240 Result of Studies
Assessment is continuous

A third-year degree subject, which introduces the student to the study of psychology and those areas relevant to marketing and advertising. It aims to have students demonstrate a knowledge of concepts and research in psychology and to help them understand the application of psychology to the area of marketing. It also aims to have students show an understanding of human needs and motivation by the analysis and creation of effective persuasive material. This is to be achieved by individual research projects on relevant areas of psychology and marketing for the first semester and the psychological analysis of media material in second semester.

RG303 Industrial Year
Two semesters industrial experience
Prerequisite: RG240 Result of Studies
Assessment is continuous

(See 'Y' chart.)

RG322 Print Technology
Two hours per week for one semester
Prerequisite: RG240 Result of Studies
Assessment is continuous

Investigations into the theory and application of modern print technology. It is not intended that this course will go deeply into the electronics, mechanics or chemistry of printing, but rather explore the possibilities for design, production and distribution created by modern reproduction methods. These include type composition, photo-mechanical processes (offset, screen, letterpress and gravure), and studies of paper and other stocks. This course will include the economics of production and relate to sections of the course in business administration.

Fourth year

RG410 Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite: RG341 Result of Studies
Assessment is continuous

Working in a professional atmosphere, emphasis is given to developing the student's special capabilities through assigned professional projects or self-defined problems, culminating in a major design assignment.

RG490 Design Management
Two hours per week for one semester
Prerequisite: RG341 Result of Studies
Assessment is continuous

The aim of this subject is to give students a general understanding of the business environment with an emphasis 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.

The final of the subject is ex i n s a s s o n of 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 co-ordinator and guest lecturers.
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Faculty of Art

Dean
L.A. Kilmartin, BA(Q'ld), MA(ANU), PhD(LaT), MAPsS

Sub-Deans
G. Nichols, BA(Mon)
F.X. Walsh, BA(Melb), BEd(Mon)

Assistant Registrar (Arts)
H.M. Ralston, BCom (Melb)

Administrative officer (Fac ulty)
G. Quirk

Laboratory Manager
A. Rice

Academic staff

Department of Humanities

Chair
G. Nichols, BA(Mon)

Principal Lecturer
T. Barr, BA(Adel), BEd(LaT), MA(SIT)

Senior Lecturers
T.W. Burke, MSocSc(Birm), MEd(Mon)
T.G. Castleman, BA(Hons)(IND), PhD(Mon)
D.Y. Mayer, MA(Mon), LLB(Melb), GradDipEd(Haw)
F.X. Walsh, BA(Melb), BEd(Mon)

Lecturers
J. Barbour, BSc(ElecEng)(SAust)
K. Betts, BA(Hons), PhD(Mon)
S. De Boer, MA(Mon), MACE
L.I. Hancock, BA(Hons), PhD(Mon)
D. Hayward, BA(SIT), GradDipU&U Soc(SIT)
S. Lahka, BSc(Hons)( Hull), PhD(Mon)

Department of Liberal Studies

Head
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Lecturers
J.J. Arnold, BA(Melb), DipEd(Melb), M.A.C.E.
P.E. Mitchell, BA(Hons)(Melb), CerEd(Lond)
G.C.J. Morieson, BA(Mon), DipSocStud(Melb), Grad Dip Ed(Haw)
C.L. Peterson, BA(Mon)
I.J. Salman, BA(ANU), DipEd(C.C.A.E.)

GradDipAppLing(Melb)
M.C. Van Geloven, Drs(Amst), MAPsS

Department of Psychology

Head
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J.P. McLennan, MA(ANU), GradDipEd(Haw), MAPsS
J.F. Wangeman, MA, BCom, BEd(Melb), MAPsS

Lecturers
G.W. Bates, BCom, BA(Hons), MA(Clin. Psych.) (Melb), MAPsS, MABPA
R.H. Schmid, BA(Hons)(Melb), MEd(Mon), MAPsS
A.J. Lock; G.H. Gotts, MSc(Caig), MAPsS
J.M. Rice, BSoc(Hons), PhD(LaT), MAPsS

Department of Social and Political Studies

Chair
G. Nichols, BA(Mon)

Principal Lecturers
T. Barr, BA(Adel), BEd(LaT), MA(SIT)

Senior Lecturers
T.W. Burke, MSocSc(Birm), MEd(Mon)
T.G. Castleman, BA(Hons)(IND), PhD(Mon)
D.Y. Mayer, MA(Mon), LLB(Melb), GradDipEd(Haw)
F.X. Walsh, BA(Melb), BEd(Mon)

Lecturers
J. Barbour, BSc(ElecEng)(SAust)
K. Betts, BA(Hons), PhD(Mon)
S. De Boer, MA(Mon), MACE
L.I. Hancock, BA(Hons), PhD(Mon)
D. Hayward, BA(SIT), GradDipU&U Soc(SIT)
S. Lahka, BSc(Hons)(Hull), PhD(Mon)

GradDipUrbanStudies(Lond)
P.J. Love, MA(LaT)
K. Middleton, BA(Mon), MA(LaT)
J. Mulvany, BA(Hons), DipEd, PhD(Mon)
K.J. Rowley, BA(Hons)(Melb)

TP. Ryan, BA(Hons), BEd(Monash)

K. Sands, BA(Hons)(Melb)
J. Schmid, MA(Melb)
D. Welch, BA(Melb)
Arts courses offered

NO50 Bachelor of Arts
A057 Bachelor of Business/Bachelor of Arts (Japanese)
A058 Bachelor of Business/Bachelor of Arts (Italian)
NO84 Graduate Diploma in Applied Psychology
NO86 Graduate Diploma in Equal Opportunity Administration
NO87 Graduate Diploma in Japanese for Professionals
NO82 Graduate Diploma in Urban Research and Policy
NO90 Master of Arts

Undergraduate courses

NO50 Bachelor of Arts

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. It would usually take six years, but this time may vary according to the study time available to the student.

Career opportunities
The intention of the course is to foster individual student development, to develop skills and encourage investigation and enquiry which may be applied to a range of situations. Arts students learn how to gather, synthesize and assess information, how to conceptualize 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. Graduates, after further study, may gain qualifications to become, for example, psychologists, librarians, sociologists or teachers.

Eligibility
Applicants in the following categories will be considered for admission to the Bachelor of Arts degree course.

Year 12 (Group 1 subjects)
Grade D or better in four Year 12 subjects, previously accredited by the Victorian Curriculum and Assessment Board (VCAA) including English. (Passes may be accumulated over more than one year.)

Selection of applicants of this type will be determined on the basis of their approved Anderson score. A faculty quota for this type of entry will be applied.

Year 12 (Group 2 subjects)
Applicants will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each candidate’s likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant’s educational/academic background and employment background, together with the written reasons for wishing to undertake the Swinburne BA. A faculty quota for this type of entry will be applied.

Victorian Certificate of Education (Tertiary Orientation Program)
Applicants who have completed a VCE(TOP), including a pass in English, will be considered for selection on the basis of a computed Anderson-type score supplemented by any written student reports from the technical or TAFE college concerned. A faculty quota for this type of entry will be applied.

Mature-age entry
Persons 21 years and over, and who may lack formal educational qualifications may apply. Applications will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each applicant’s likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant’s stated educational background, employment background, together with the written reasons for wishing to undertake the Swinburne BA. A faculty quota for this type of entry will be applied.

Special entry
Persons under 21 years who have completed studies deemed by the Institute to be the equivalent of Year 12 may apply.

Applications will be considered by the Undergraduate Selection Committee which will arrive at a subjective evaluation of each applicant’s likelihood of completing the course. The Undergraduate Selection Committee will take into account an applicant’s stated educational background together with the written reasons for wishing to undertake the Swinburne BA. A faculty quota for this type of entry will be applied.

Application procedure
Full-time first year ➔ to Victorian Tertiary Admissions Centre (VTAC)
Part-time all years ➔ to Swinburne
Full-time later years ➔ to Swinburne

Full-time study
Applications for a full-time place in the Bachelor of Arts course must be made through the Victorian Tertiary Admissions Centre, 40 Park Street, South Melbourne 3205.

Prospective students should ascertain the relevant closing dates for applications in September or early October of the year preceding that in which they would like to commence studies.

Part-time study
Applications for a part-time place in the Bachelor of Arts course must be made directly to the Admissions Officer, Swinburne Institute of Technology, PO Box 218, Hawthorn 3122, on the Institute’s application form. The application form is available from the Admissions Office, or from the Arts Faculty Office. When completing the application form, applicants should:

(i) provide full information and documentary evidence of previous study undertaken;
(ii) outline reasons for wanting to undertake the course;
(iii) indicate the subject areas likely to be of interest at this stage.

The transfer of students from other faculties or from other institutions, shall be at the discretion of the Sub-Dean (Students) and shall be contingent upon the availability of places and upon the applicant having a satisfactory study record.

Single subject study
It is possible to study a subject offered by the Arts Faculty without enrolling in the BA degree.

An application form is required for this, and is available from the Arts Faculty Office.

People interested in studying as a single subject student should note that such studies cannot be counted towards a BA degree, and also involve the payment of a substantial tuition fee.
Entry for all eligibility categories is competitive. Applicants may be asked to attend an interview in connection with their application.

Deferred entry
Students who have been offered a place in the Bachelor of Arts course for the first time may apply to defer their entry to the course for up to one year. Applications should be made in writing to the Registrar as soon as the offer of a place is received.

When an application is approved, the student concerned will be notified in writing by the Assistant Registrar. Deferred entry will be valid for a maximum period of one year and only for entry to the course for which the offer was made. Deferment is not granted to students who have been offered a place in postgraduate studies.

Exemptions
Students with certain recognised tertiary qualifications may be granted exemptions after applying to the Arts Faculty Board. In special cases, exemptions from named full-year and/or semester subjects are allowed, but unspecified exemptions may also be granted which provide for a reduction in the total unit value to be studied.

Students who think they may be eligible should apply for exemptions soon after they first enrol, presenting documentary evidence of prior qualifications. Applications should be made by completing the Exemptions form available from the Faculty of Arts Office (BA915) or the Student Administration Office and lodging it with the Assistant Registrar (Arts).

A reference copy of the current Faculty of Arts exemption policy document is available at the Faculty of Arts Office (BA915). Teachers in the Victorian Ministry of Education are advised to consult the appropriate body about seeking exemptions from degree and diploma courses on the basis of teacher training qualifications, as the Ministry has previously indicated that such claims would not meet with its approval.

Terminology
‘Course’ — refers to the total of selected subjects in a complete diploma or degree.
‘Subject area’ — refers to the category under which specific studies are grouped (e.g. psychology, literature).
‘Semester subject’ — refers to a single half-year unit of study.
‘Full-year subject’ — refers to a subject which extends over two semesters in one academic year.
‘Major’ — within one subject area, a full year of study at stages two and three preceded by either a full-year or semester subject at stage one.

Bachelor of Arts course requirements
To qualify for the award of the degree of Bachelor of Arts students are required to:
(a) complete two of the following majors —
   Italian
   Japanese
   Korean
   Literature
   Media Studies
   Political Studies
   Psychology
   Sociology
   Economics
   or
   a double major in either Political Studies or Psychology or
   a combination, approved by the Arts Faculty Board, of one of the majors listed above, plus one other major drawn from outside the Faculty of Arts.
(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 1, 2, and 3.

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.

Studies constituting major strands
In Italian, Japanese, Korean, psychology, sociology and economics, majors must include a full year of study at stage one as well as at higher stages. In other Arts subject areas, historical and philosophical studies, literature, media studies 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. Before students begin a mixed major, they must have the approval of the head or chair of the relevant department.

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 Sub-Dean (Students), Faculty of Arts.
(b) In each year of study full-time students are expected to gain passes in at least six semester subjects in stage one, and at least four in each of stages two and three.
(c) A full-time student who wishes to enrol for more than the usual number of subjects in any semester is required to apply to the Sub-Dean (Students), Faculty of Arts, giving reasons for the request.

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 Sub-Dean (Students), Faculty of Arts.
(b) A part-time student will be considered to have achieved progress if he or she has achieved passes in three semester subjects in a given year.

Progress review
A student who has failed to meet the foregoing requirements may be re-enrolled only after discussion with the Progress Review Committee.
A student who has been recommended for exclusion from the course may appeal in writing, within a time specified by the Dean, Faculty of Arts, to the Convener of the Progress Review Committee for special consideration.

The general criteria for an appeal are as follows:
(a) the student must convince the Committee of genuine grounds for the request;
(b) past academic standard must indicate a capacity to complete the course.

A student who feels aggrieved by the decision of the Progress Review Committee may appeal to the Dean of Faculty.

Change of enrolment status
Students may change their enrolment status from part-time to full-time, or vice versa, at the beginning of a semester. Applications should be made to the Sub-Dean (Students), Faculty of Arts.
Amendment to enrolment

Students may amend their subject selection by completing an Amendment to Enrolment form which must then be approved by the Sub-Dean (Students), Faculty of Arts. Students are fail encouraged to enrol for a subject which has passed its introductory stages and usually admission to a subject three weeks after it has begun is not allowed.

To withdraw from a subject or subjects students must lodge a completed Amendment to Enrolment form by the date specified for each semester, or a fail result will be recorded. For a subject which concludes at the end of the first semester — not later than 31 March 1990. For a subject which concludes at the end of the second semester — not later than 31 August 1990. (Further details see under the section headed 'Enrolment regulations'.)

Leave of absence from all study

Bachelor of Arts

Students who wish to apply for leave of absence from the Bachelor of Arts degree course should complete an Amendment to Enrolment form and submit it to the Assistant Registrar (Arts). The application should clearly indicate the reasons for the request and the length of time for which leave is sought. For subjects which conclude at the end of first semester the form should be lodged not later than 31 March 1990. For subjects which conclude at the end of second semester — not later than 31 August 1990. Failure to make formal application before the specified date(s) will result in a fail being recorded for those subjects in which the student is enrolled, unless special permission to cancel the enrolment without penalty of fail has been given by the Sub-Dean (Students), Faculty of Arts.

Leave of absence of more than two consecutive semesters will not normally be approved.

A student who feels aggrieved by the decision concerning a request for leave of absence may appeal to the Dean of the Faculty. Graduate Diploma

Usually, leave of absence is granted to graduate diploma students only if one semester of their course has been completed.

Withdrawal from all study

Students wishing to withdraw from all study must lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915), or the Student Administration Office, and return their identity cards. (Further details see under the section headed 'Enrolment regulations'.)

Concurrent majors at other institutions

Students who wish to study a major at another institution can obtain further details about application procedures from the Assistant Registrar (Arts).

Reading guides

In most subjects, conveners will issue detailed reading guides of recommended reference lists 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.

Subject selection

The onus is on individual students (assisted by course advisers when enrolling) to have completed by the end of their stage three studies, a course which will entitle them to the award of a degree of Bachelor of Arts.

Faculty of Arts subject details are listed, under departments, in alphabetical order, by stages in the section which follows. Provided that course requirements are observed, and provided that places in classes are available, subjects may be selected from the full range. Some subjects are offered at one stage only and for that reason cannot form part of a major, e.g. AJ102 Introduction to Japan — a Cultural Overview.

Subjects taught by departments in other faculties may be taken in addition to the Arts subjects offered and these are listed separately. Any Arts student wishing to take one or more of these subjects must have the approval of both the Faculty of Arts and the teaching department concerned, as enrolment in the subject may depend on the availability of places or on certain prerequisites or both. However, the course regulations specify that:

(a) subject selection for both semesters) and once approved, may not amend their enrolment without the approval of the Sub-Dean (Students), Faculty of Arts.

Appointments with course advisers during the semester may be made through the Faculty of Arts Office (BA915).

Subject corequisites (double major students)

Corequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject.

These corequisite subjects must either be completed before students take subjects taught outside the Faculty up to a maximum unit value of six;

(b) students taking one approved major outside the Faculty may take subjects taught outside the Faculty up to a maximum unit value of ten.

(For the purpose of this regulation the subjects SM278 and SM279, Design and Measurement 2A and 2B are regarded as subjects within the Faculty of Arts.)

When attending to enrol, students are issued with detailed instructions to assist in planning a suitable course. All students are required to complete enrolment forms (indicating their subject selection for both semesters) and once approved, may not amend their enrolment without the approval of the Sub-Dean (Students), Faculty of Arts.

Subject prerequisites

Prerequisites for subjects (both semester subjects and full-year subjects) are indicated in the details for the particular subject.

These prerequisites must be completed before students take subjects from stage three. Any divergence from this requirement must have the approval of the subject convenor concerned and the Sub-Dean (Students), Faculty of Arts.

Time allocations per week

Each semester subject runs for fourteen weeks. Stage one and stage two subjects involve approximately four hours per week of class attendance and stage three subjects, three to four hours per week of class attendance. More class time is usually required for those subject areas which incorporate laboratory or workshop requirements, for example, Italian, Japanese, psychology and sociology.

Assessment

The details of the methods of assessment for each subject are issued by the lecturers in charge. Usually, a combination of progressive assessment and examinations is employed.
Centres
Faculty of Arts 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 Women's Studies
(See pages 34 and 35 for details.)

Scholarships and Prizes
Study in Japan Scholarship
Awarded to assist students who are either postgraduate or Stage 3 level, to study in Japan. Applications close in June. Value: may include return air fare to Japan and tuition fees.

APS Prize in Psychology
Awarded by the Australian Psychological Society to the student who has completed with overall distinction a fourth year course in psychology at Swinburne. Value: $100.

The A.F.E. Tylee and the K. Kennewell Memorial Prizes
These are awarded in the fields of social science, mathematics and civil engineering.

Departments in the Faculty of Arts
Within the Faculty of Arts there are four departments, each responsible for different subject areas, they are:

Department of Humanities
Historical and philosophical studies .......... page 106
Italian ........................................... page 109
Japanese ........................................ page 111
Korean .......................................... page 112
Literature .................................... page 114

Department of Liberal Studies
Subjects for students of other faculties only , page 115

Department of Psychology
Psychology ....................................... page 116

Department of Social and Political Studies
Media ............................................. page 118
Political studies ................................ page 121
Sociology .................................... page 124

Each department has a head or chair and enquiries may be directed to their secretaries.

UNLESS STATED OTHERWISE ALL SUBJECTS ARE SEMESTER SUBJECTS.

DEPARTMENT OF HUMANITIES
Historical and Philosophical Studies
The subjects offered under the heading of historical and philosophical studies draw on the traditional areas of philosophy, history, and philosophy of science. They are designed specifically for Arts students and are intended to introduce them to some of the important cultural and intellectual developments which have shaped our society. In the historical subjects the main emphasis is on the social and political context of the events, whereas the philosophical subjects are concerned with the philosophical implications of these events.

Subjects offered
Code
Stage 1
AH100 Introduction to Philosophy
AH101 History of Ideas
AH102 Theories of the Universe

Stage 2
AH200 Moral and Political Philosophy
AH201 Mind, Language and Thought
AH202 Technology and Society
AH203 Nature and Human Nature

Stage 3
AH301 Rationality
AH302 Social Studies of Science A
AH303 Social Studies of Science B
AH304 Philosophy of Science A
AH305 Philosophy of Science B
AH306 Practical Ethics

Subject details
Stage one
AH100 Introduction to Philosophy
Semester subject
Three hours per week
Prerequisite, nil
Assessment is continuous and by examination

An introduction to the problems and methods of philosophy. An examination of rationalist and empiricist traditions and the development of modern analytic schools of thought. 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, the existence of God, religious concepts and the problem of evil.

Preliminary reading
Textbooks
Please consult with lecturer before buying textbooks
**AH101 History of Ideas**

Semester subject  
Three hours per week  
Prerequisite, nil  
Assessment is continuous

This subject serves as an introduction to the history of ideas. Special attention is paid to the evolutionary theme, as an example of the impact of the scientific imagination on our lives. Darwin's theory of evolution has transformed our understanding of our origins, our relations to each other, to society, and to the environment. Evolutionary theory has also affected many branches of science, from biology to psychology, giving them a sense of change through time. The intention is to bring out the relationship of the evolving ideas to the wider social context.

**Textbooks**  

**References**  
Love, F. Darwin and Social Darwinism. Geelong: Deakin University Press, 1992  

**AH102 Theories of the Universe**

Semester subject  
Three hours per week  
Prerequisite, nil  
Assessment is continuous

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**  

**Stage two**

**AH200 Moral and Political Philosophy**

Semester subject  
Three hours per week  
Prerequisite, one of AH100, AH101, AH102 or approved equivalent  
Assessment is continuous

An examination of some of the traditional theories of the state of political organisation. An analysis and evaluation of assumptions underlying moral and naturalistic theories of the state and the application of these theories to current social and political problems. An examination of notions of freedom, justice, equality, power, unity and the legitimate use of authority; an analysis of concepts of consent, obligation, the common good and social contract.

Some of the more important writers to be considered are: Plato, Aristotle, Locke, Mill, Aquinas, Hobbes and Rousseau.

**Textbook**  

**References**  

**AH201 Mind, Language and Thought**

Semester subject  
Three hours per week  
Prerequisite, one of AH100, AH101, AH102 or approved equivalent  
Assessment is continuous

An introduction to some of the major problem areas in philosophy chosen from:

(a) mind and body; sensations and brain processes; dualism and monism;  
(b) free will; determination and the causal principle;  
(c) phenomenalism;  
(d) language, thought and knowledge; meaning and truth;  
(e) historical development of attempts to formalise logical systems.

**Preliminary reading**  

**Textbooks**  
Please consult with lecturer before buying textbooks.

**References**  

**AH202 Technology and Society**

Semester subject  
Three hours per week  
Prerequisite, one of AH100, AH101, AH102 or approved equivalent  
Assessment is continuous

Within the general framework of social history this course emphasises the interaction between technology and social change: ancient societies, Greece, Rome, modern Europe, England, America, Australia, Politics, economics, religion, values, traditions, social structures, education, relations with neighbours, knowledge and skills, are factors which combine to influence the course of technological development. Also considered are the moral dilemmas of the modern technologist and problems of pollution and environment control.
Preliminary reading


Textbook


References

Forbes, R. Man the Maker London: Abelard, 1964

AH203 Nature and Human Nature
Semester subject
Three hours per week
Prerequisite, one of AH100, AH101, AH102, or approved equivalent
Assessment is continuous

The purpose of this course is to examine the ways in which biological theories of behaviour and heredity have influenced social thought. The interrelationships between theories of human nature are explored in terms of the birth of the new science of psychology at the end of the nineteenth century. Themes to be explored include: the 'mis-measure of man'; the origins of the nature/nurture controversy; the rise of the concept of culture in social science; the origins of industrial psychology; biology and scientific Utopias; the concept of the savage; behaviour and the perfectibility of man; scientific theories of race and their impact; the image of the black Australian in European anthropology; Sigmund Freud, his life and times.

Textbooks


References


AH301 Rationality
Semester subject
Three hours per week
Prerequisites, AH100 and two of AH200, AH201, AH202 and AH203 or at least one of AH200 and AH201
Assessment is continuous

This course covers some of the recent work on the nature of human rationality. Topics include: the status and justification of rationality: reasoning and values; cognitive relativism; the place of reason in theory comparison and appraisal.

Textbooks

Please consult with lecturer before buying textbooks

References


AH302 Social Studies of Science A
Semester subject
Three hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

This subject, which may be taken independently of Social Studies of Science B, engages in the contemporary debate on the social construction of scientific knowledge. Topics are drawn from recent science, in particular, Australian science, with emphasis on the physical sciences; scientific institutions, science, and the media.

Textbooks

Barnes, B. and Edge, D. Science in Context Boston: MIT Press, 1982

References


AH303 Social Studies of Science B
Semester subject
Three hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
Assessment is continuous

This subject, which may be taken independently of Social Studies of Science A, evaluates the current debate on the social construction of biological and biomedical knowledge. Historical case studies illuminate the relationship between theories of life, medicine, technology, social theory and social action in the nineteenth and twentieth centuries. Topics include: the history of public health; biotechnology and its critics; current debates on environmental issues, e.g. The Greenhouse effect.

References

Barnes, B. and Edge, D. Science in Context Boston: MIT Press, 1982
Susan Solsona. AIDS and its Metaphor. Forthcoming, 1999

AH304 Philosophy of Science A
Semester subject
Three hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or approved equivalents
Assessment is continuous

An introduction to some of the central topics in current and classical philosophy of science and social science, e.g. what constraints on social factors place on science and social science? How do we develop our laws and theories? Are all events caused? What is the function of paradigms? What is the role of the scientist and social scientist in the developmental knowledge? Among the authors whose works will be considered are Hempel; Kuhn; Loeser, Nagel, Popper, Ravetz, Ziman.

Preliminary reading

Theobald, L. An Introduction to Philosophy of Science. London: Methuen, 1968

Textbooks

Please consult with lecturer before buying textbooks

References

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

AH305 Philosophy of Science B
Semester subject
Three hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or approved equivalents
Assessment is continuous

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, emotions and belief systems on the scientific enterprise, e.g. biotechnology, I.VF. 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

Kantegjens, H. Knowledge and Science. Melbourne: Macmillan, 1977
Subjects offered

Code
Stage 1
AA100 Italian 1
Stage 2
AA200 Italian 2
Stage 3
AA300 Italian 3A
AA301 Italian 3B

Subject details

Stage one

AA100 Italian 1

Full year subject
Six hours per week daytime and evening
Prerequisite, nil
Assessment is partly continuous, partly by examination

This is a practical introduction to the language; a basic grammatical and conversational ability will be achieved. Use is made of language laboratory facilities. The course also includes a general introduction to the study of Italian civilisation and the Italian way of life.

Textbooks

References
Appropriate references will be given by the lecturers at the beginning of the year.

AA101 Italian 1 (Post VCE)

Full year subject
Six hours per week daytime and evening
Prerequisite, VCE Italian or recognized equivalent
Assessment is partly continuous, partly by examination

The course is designed to acquaint students with the Italian language, the native tongue of one of Australia’s largest immigrant groups. 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 as are seen to be appropriate to an understanding of the modern nation and its inhabitants, and especially to an appreciation of the position of Italian immigrants and their families in Australia.

A degree major in Italian consists of AA100 at stage one, followed by AA200 at stage two, then AA300 and AA301 at stage three. Normally, AA300 is completed prior to, or concurrently with, AA301.

The subjects offered in Italian assume no prior knowledge of the language. These subjects may not meet the needs of native speakers of Italian.

If a student requests exemption from any part of an Italian 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.
Stage two

AA200 Italian 2
Full year subject
Six hours per week, daytime and evening
Prerequisite, AA100 or approved equivalent
Assessment is partly continuous, partly by examination

The main objectives of this subject are:
- To extend the knowledge of Italian language and literature 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

AA201 Italian 2 (Post VCE)
Full year subject
Six hours per week, daytime and evening
Prerequisite, AA100 or recognised equivalent
Assessment is partly continuous, partly by examination

The main objectives of this subject are:
- To develop the students' linguistic competence further through the study of grammatical and literary texts. Reading and discussion of articles taken from Italian newspapers and magazines which deal with economic, political, and social issues is an integral part of the program.

Textbooks
Literary texts to be advised

Stage three

Note: In order to complete a major in Italian, students must take both Italian 3A and Italian 3B. The two subjects may be taken concurrently or Italian 3B may be taken after completion of Italian 3A.

AA300 Italian 3A
Full year subject
Six hours per week
Prerequisite, AA200 or approved equivalent
Assessment is partly continuous, partly by examination

The main objectives of Italian 3A are:
- To consolidate the students' language skills and to develop these further through a study of appropriate literature; to develop their skills through conversation and discussion in Italian; to develop in the student's understanding of contemporary Italy and of Italian immigrants in Australia through the study of contemporary documents on present day Italy and of appropriate films and other media. Italian-Australian literature is examined, not only as literature, but also as a social document which reflects the thoughts and aspirations of a particular group in a particular period.

Textbooks
A novel to be advised.


AA301 Italian 3B
Full year subject
Two hours per week
Prerequisite, AA300 (Italian 2 if the subject is being studied concurrently with Italian 3A)
Assessment, dialectology assignment, October (100%)

Students of Italian are mainly of non-Italian origin, whose contact with the Italian language has been largely through study. Their knowledge of Italian is therefore, at this stage, almost exclusively a knowledge of the official standard language. As student contact with native speakers is expected to increase substantially during the third year of the course, students will quickly become aware that the language used by Italians will not always be that which they have encountered in their studies. The purpose of the course in dialectology is therefore to apprise students of the differences and of the reasons therefore. It is not the intention that students learn to use a dialect or dialects. For students of Italian origin, the course is intended to instil an appreciation of the dialect as a valid and viable means of communication.

Assessment is on the basis of an assignment involving use of a questionnaire administered to a dialect-speaking informant, and a critical appraisal of the material collected.
DEPARTMENT OF HUMANITIES

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. This course trains students to communicate effectively in Japanese and it also provides the opportunity to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.

With the deepening of relations between Australia and Japan currently with a greater number of Australians. Furthermore, it is important to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.

Students undertaking a major in Japanese are strongly recommended to study an alternative syllabus to that shown in this Handbook.

Textbooks

Machida, T. and Skoutarides, A. Nihongo, Reading and Writing, Vols. 1-5, Melbourne: Swinburne Press, 1985
Neustupny, J.V. Introduction to Japanese Writing, Melbourne: Japanese Studies Centre, 1984
Machida, T. Introduction to Japanese Writing, Melbourne: Swinburne Press, 1982

References


Faculty of Art
Stage two

AJ200  Japanese 2
Full year subject
Eight hours per week daytime or six hours per week evening
Prerequisite, AJ100 or approved equivalent
Assessment is continuous
This subject extends the range of language patterns, grammar and writing. It also provides further training in oral and aural Japanese. Students are introduced to various topics on Japanese culture and society through reading in Japanese. A variety of audio-visual material is used throughout the course.

It is highly recommended that students enrolled in this subject also enrol for AJ202 which is offered in first semester.

Textbooks
Machida, T. and Skoutarides, A. Ninjho, Reading and Writing. Vols. 6-10, Melbourne: Swinburne Press, 1988

AJ202  Communication in Japanese
Semester subject
Three hours per week
Prerequisite, AJ100
Assessment is continuous
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 and aural Japanese.

Students are introduced to Japanese contacts and are required to write essays based on data collected from interviews with these contacts. The contact scheme and audio-visual material serve as an important component of this course as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

Textbook

Preliminary reading

References

Stage three

AJ300  Japanese 3A
Full year subject
Six hours per week daytime or six hours per week evening
Prerequisite, AJ200 or approved equivalent
Assessment is continuous
This subject continues systematically to extend the students’ use of spoken and written Japanese. The reading component includes some modern, non-fiction and simplified radio news broadcasts and excerpts from video programs. The conversational component extends the range of situational dialogues and allows individualized conversational practice on a wide variety of topics. Students may choose to study stage three in Japan, in which case they are still required to complete the Swinburne stage 2 or work. A scholarship scheme and a Work-in-Japan scheme have been established to enable students to undertake this alternative.

Textbooks

References
Please consult with lecturers before buying these books.

AJ301  Japanese 3B
Full year subject
Two hours per week
Prerequisite, AJ200 or approved equivalent
Assessment is continuous
This subject consists of a two-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.

Textbooks
Dictionaries as for AJ300

Korean

The successful staging of the 1988 Seoul Olympics symbolized the steady emergence of the Republic of Korea during the 1980s as a major international economy. Korea is a major trading partner of Australia, while tourism and immigration are also major areas of contact between the two countries. The course B.A. (Major in Korean) was established in 1989 at Swinburne and offers three years of systematic language training to enable students to communicate effectively in modern spoken Korean, and to read fluently a wide range of modern written material in Korean. Supporting units provide the opportunity to supplement language studies with courses on culture, society, economy and politics.

The subjects AK100, AK200, AK300 and AK102 form a degree major in Korean. In 1990, AK200 and AK200 will be offered. Students intending to complete a major should enrol in the first instance in AK200 Korean 1.

Students undertaking a major in Korean are also strongly advised to enrol for AK102 Background to Contemporary Korean Society, which is offered in Semester 2. This course is also open to students not undertaking the full Korean language sequence.

The language subjects offered in Korean have been designed to meet the needs of non-native speakers, and it is therefore not recommended that native speakers undertake these courses. 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
AKK00 Korean 1
AK102 Background to Contemporary Korean Society

Stage 2
AK200 Korean 2
AK202 Contemporary Korean Society
AK203 Modern Korea

Stage 3
AK300 Korean 3A
AK301 Korean 3B
Subject details

Stage 1

AK100 Korean 1
Full year subject
Eight hours per week daytime
or
Six hours per week evening
Prerequisites nil
Assessment is continuous

The objective of the course 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, reals, and video-cassettes. Audio cassettes of the course material will be available to students for purchase or loan.

Textbooks

AK102 Background to Contemporary Korean Society
Six hours per week evening
Prerequisites, nil
Assessment is continuous
or
Four hours per week evening
Prerequisites, nil
Assessment is continuous

This subject will provide an Introduction to aspects of pre-modern Korea of particular relevance to the understanding of modern Korean language and society. The course will use English language reference material.

References

(Note: the above sources will be supplemented by a variety of specialist journal articles.)

Stage two

AK200 Korean 2
Full year subject
Eight hours per week daytime
or
Six hours per week evening
Prerequisite AK100 or approved equivalent
Assessment is continuous

The objective of the course will be to extend the students’ command to modern spoken Korean. This will entail further instruction in language patterns, grammar, reading, writing, aural comprehension with increasing emphasis on media Korean and on socio-linguistics. A wide range of audio-visual materials will be used, including language slides, cassette tapes, reals, 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 AK202 and/or AK203.

Textbooks

AK202 Contemporary Korean Society
Four hours per week evening
Prerequisite nil
Assessment is continuous

This subject will focus on topics of particular relevance to the modern transformation of Korean society with the aim of assisting students to gain a better understanding of the context in which the modern Korean language is spoken.

References

AT116 Introduction to Language
Three hours per week
Prerequisite, nil
Assessment is continuous

In this subject, basic linguistic concepts are introduced which are necessary to the understanding of the mechanics of language. The topics studied include sound systems of human speech, the combination of sounds into words, the rules for combining words into sentences, the study of meaning, the role of discourse, and language usage within a social system.

Although most of the examples are taken from the English language, their applicability to Japanese, Korean, Italian and other languages is also explained. Students undertaking foreign language majors are highly recommended to include this subject in their course. It is also available to students not studying languages.

References
DEPARTMENT OF HUMANITIES

Literature

Through the study of language and literary forms, structures and genres, traditions and conventions, the literature subjects offered aim to improve the ability of students to understand literature and experiences of many kinds and of many periods, from the Renaissance to the present day. Stage one offers comparison and contrast in studies of sixteenth, seventeenth and eighteenth century writing, including several plays by Shakespeare and his contemporaries. Stage three is focused on American and Australian literature, examining within a wider perspective the experiences of these societies, documented in their imaginative writings. Final-year students in particular are encouraged to research the literature and culture of their own communities.

Studying literature should promote both imaginative flexibility in confronting new experiences, and analytical discrimination in assessing what is written, acted and spoken. The development of students’ intellectual and personal capabilities is the chief concern of the literature course.

A literature major consists of: one or both of AL100 and AL101 at stage one, followed by both AL200 and AL201 (not necessarily in that sequence) at stage two, and three of AL300, AL301, AL302 and AL303. It is preferable, but not obligatory, that AL300 be taken before AL301, and that AL302 and AL303 bear the same sequential relation to each other.

Subjects offered

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Subject details

Stage one

AL100  
**Twentieth Century Literature**  
Semester subject  
Three hours per week  
Pre-requisite, nil  
Assessment is by assignments and examination

This subject introduces students to a selection of twentieth-century literature, relating it to recent developments in the other arts and in society. Students are also introduced to some of the varied possibilities inherent in the novel, drama and poetry as literary forms.

Preliminary reading  
Dawson, S.W. Drama and the Dramatic. London: Methuen, 1970  

AL101  
**Nineteenth Century Literature**  
Semester subject  
Three hours per week  
Pre-requisite, nil  
Assessment is by assignments and examination

This subject surveys Romantic and post-Romantic writers of the nineteenth and early twentieth century, emphasizing the artist’s awareness of the increasing divergence from social concerns. The course includes English and American fiction and drama.

Preliminary reading  
As for AL100

Stage two

AL200  
**Elizabethan and Jacobean Literature**  
Semester subject  
Three hours per week  
Pre-requisites, AL100 or AL101 or approved equivalent  
Assessment is by assignments and examination

The course focuses on drama and poetry. There are background lectures on Elizabethan civet and the theatre, and the study of some selected works of other dramatists and poets of the age.

Preliminary reading  

AL201  
**Seventeenth and Eighteenth Century Literature**  
Semester subject  
Three hours per week  
Pre-requisite, AL100 or AL101, or approved equivalent  
Assessment is by assignments and examination

The relationship between literature and society in seventeenth and early eighteenth-century England with particular emphasis on the shorter poems of Milton: Restoration drama; the social values that are exposed by the Augustans; the satirists, especially Swift and Pope, as critics of their society.

Preliminary reading  

Stage three

AL300  
**Literature of the United States — 19th Century**  
Semester subject  
Three hours per week  
Pre-requisites, either AL100 or AL101 or equivalent and both AL200 and AL201 or equivalents  
Assessment: essay, class paper and examination; class contribution

A thorough survey of 19th-century literature, concentrating on important literary landmarks and seminal authors: Emerson, Whittier, Twain, as well as Melville, Hawthorne, Poe and Dickinson. Particular emphasis on significant connections between literary works and the contemporary intellectual climate and social ethos. Wherever possible, parallels with British and European literary traditions will be stressed.

Preliminary reading  
The following subjects taught by the Department of Liberal Studies form an integral part of the courses offered by the other faculties: Applied Science, Art, Business and Engineering. They are specifically included to broaden the scope of students’ general education in the areas of communication skills, report writing, the social sciences, and other essential areas.

These subjects are not available to Arts students.

Subjects for Applied Science students

**AB210** Applied Psychology
**AB215** Complementary Studies
**AB310** Behavioural Studies
**AB411** Scientific Communication
**AB510** Communication Skills
**AB513** Brain and Behaviour
**AB611** Science and Society
**AB612** Science and Ethics
**AB619** Communication Studies
**AB711** Communication
**AB811** Communication
**AT392** Report Writing
**AT393** Communication Studies
**AT394** Report Writing
**AT650** Brain and Behaviour (1983 syllabus)
**AB951** Risk Psychology
**AB952** Risk Social Science

For individual subject descriptions, see the Faculty of Applied Science section of this Handbook.

Subjects for Art students

**AB121** Applied Writing
**AB221** Media
**AB222** Psychology
**AB322** Applied Psychology

For individual subject descriptions see the Faculty of Art section of this Handbook.

Subject for Business students

**AB641** Psychology and Interpersonal Skills

For subject description see the Faculty of Business section in this Handbook.

Subjects for Engineering students

**AB150** Communication 1
**AB151** Communication Skills
**AB250** Behavioural Studies
**AB261** Liberal Studies
**AB350** Communications 2

For individual subject descriptions see the Faculty of Engineering section of this Handbook.

General electives for Engineering students

The electives listed here are available for all civil, electrical and electronic, manufacturing and mechanical engineering students in the second and later years of their courses. The number of electives offered each year is governed by demand and the availability of appropriate staff.

The electives are:

**AB752** Applied Psychology
**AB753** Literature and Media
**AB754** Sociology
**AB755** Law in Society
**AB756** Technology and Society
**AB757** Archaeology
**AB759** Philosophy

Details of these and other possible electives are available from the Department of Liberal Studies.
The undergraduate psychology program provides students with a broad introduction to psychology in stages one and two and for those majoring in psychology, stage three. Emphasis is on vocational skills and knowledge relevant to applied fields.

The stage one course in psychology introduces students to a range of studies in psychology and statistical 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 statistics.

In stage two, in addition to AY200 Psychology 200 and AY201 Psychology 201, it is required that SM278 Design and Measurement 2A and SM279 Design and Measurement 2B be taken by students wishing to major in psychology.

In stage three, subjects are offered in Personality, Methods and Measures, Cognition and Human Performance and Counselling and Interviewing.

It should be noted that the undergraduate psychology program is sequential in nature; that is, completion of the prescribed subjects at one stage of the program is a prerequisite for study at the next level. Thus a student must complete both stage one psychology subjects before enrolling in any stage two psychology subject, and must complete both stage two psychology subjects before enrolling in any stage three subject. Details of these prerequisite arrangements are shown in entries for all psychology subjects.

It may be possible for selected students to take a double major in psychology within their course for the degree of Bachelor of Arts. Students wishing to take this option must apply to the Department of Psychology Secretary in the second semester of the second year of their course. The double major includes AY100, AY101, AY200, AY201, SM278, SM279 and all four of the stage one psychology subjects at one stage of the program is a prerequisite for study of any other subject.

Details will be provided in the first lecture in AY100.

This course centres on various aspects of cognition. Topics covered include learning, memory, information processing, intelligence and problem solving, motivation and emotion. The design and analysis of experimental studies again forms a major part of the teaching program.

Note: SM278 and SM279 must be taken by students wishing to major in psychology.
AY200  Psychology 200  
(Developmental psychology)
Four hours per week daytime
or
Three and a half hours per week evening
Prerequisite, AY100 and AY101
Assessment is based on a report, practice exercises and class tests

This is a subject in developmental psychology, which emphasises the earlier periods of life at times when the behaviour of infants and children is undergoing rapid development and maturation. Emphasis is on social, emotional, cognitive and intellectual development with a comprehensive experiential and experimental program supporting the theoretical material. Students are encouraged and expected to interact with children of various ages.

The teaching program consists of two lectures, a practical session and a tutorial class.

Reference

AY201  Psychology 201  
(Social psychology)
Four hours per week daytime
or
Three and a half hours per week evening
Prerequisite, AY100, AY101, SM278
Assessment is continuous

This subject is the scientific study of the personal and situational factors that affect individuals. The aim is to introduce students to the key conceptual and theoretical models in social psychology and to develop scientific and personal skills.

The teaching program involves two lectures per week plus a tutorial and practical session.

Reference
Baron, R.A. and Byrne, D. Social Psychology: Understanding Human Interaction. 5th edn, Boston: Allyn & Bacon, 1987

Stage three

AY311  Methods and Measures*  
Two hours per week
Prerequisites, AY200, AY201, SM278, SM279
Assessment will involve four assignments

This subject is made up of two modules: (i) Analysis and Evaluation of Psychological Research, and (ii) an Introduction to Psychometric Techniques.

In the first module, emphasis will be given to developing an understanding of the techniques, procedures and problem-solving strategies used in psychology research. The aim of this module is to enhance students’ ability to competently and critically analyse and evaluate research proposals, programs and reports.

In the second module, students will be involved with the practical problems of psychometrics: test design, construction and validation.

The aim of this module is to help students to develop a greater appreciation of the advantages, disadvantages, and limitation of the uses of particular psychological tests.

Approximately the last hour of most of the two hour sessions will be taken as a supervised tutorial to test exercises.

References
Aiken, L.R. Psychological Testing and Assessment. 6th edn, Boston: Allyn and Bacon, 1986
Kline, J. A Handbook of Test Construction. Methuen, 1986
NB. This course contributes one half unit to the degree unit total.

AY312  The Psychology of Personality  
Three hours per week
Prerequisites, AY200, AY201, SM278, SM279
Assessment is based on an examination and a research project and report

This course 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, 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 examined. Selected contemporary issues are examined including: conflict and defense; the self; self-regulation; purpose and meaning; the effective personality.

Reference

AY313  Cognition and Human Performance  
Three hours per week
Prerequisites, AY311, AY312
Assessment is based on project work and laboratory exercises

This course examines the theories, mechanisms and processes involved in cognitive functioning applied to memory, attention and human performance. It will provide a basis for the understanding of skill acquisition, of the effects of motivation and overload, and of arousal levels, on performance. After a general introduction to theory, the following topics will be examined: structure of memory, attention and perceptual-motor performance, human skills. Selected applications of these topics will be considered in areas such as occupational psychology, human factors, sports psychology, decision-making, learning.

References

AY314  Counselling and Interviewing*  
Two hours per week
Prerequisites, AY311, AY312
Assessment is based on a class test of theory, and a practical interviewing skills project

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 microcounseling model proposed by levy. Video-assisted practice interviews form a major part of the course. Models of counseling, such as that proposed by Egan, are discussed.

The major theoretical perspectives in relation to counselling are introduced: experiential, psychodynamic, cognitive/behavioural, family systems.

Issues concerning the role of counsellors in society are considered.

References
Benjamin, A. The Helping Interview. 4th edn, Boston: Houghton Mifflin, 1986

NB. This course contributes one half unit to the degree unit total.

AY315  History and Philosophy of Psychology*  
Two hours per week
Prerequisites or corequisites, AY311, AY312 (This subject is available only to students enrolled in the double major in psychology)
Assessment is based on a research essay and a class test

This course provides a brief introduction to selected influential theorists in psychology and contemporary philosophers of science. It addresses itself to two central issues: what is a science, and how is scientific research performed in psychology? Attention will be directed to the work of Karl Popper, Thomas Kuhn, Imre Lakatos, Paul Feyerabend and others to consider what constitutes 'scientific method'. Selected key movements in the history of psychology will then be investigated to determine whether they can appropriately be regarded as 'scientific' in their definition of subject matter and their method of inquiry.

Reference
Chalmers, A.F. What is This Thing Called Science? 2nd edn, St. Lucia: Queensland University Press, 1982

NB. This course contributes one half unit to the degree unit total.
AY316  Applied Social Psychology
Three hours per week
Prerequisites or corequisites, AV311, AV312
(This subject is available only to students enrolled in the double major in psychology)
Assessment is by a class test and a major research project.

This lecture and seminar program will provide students with an understanding of the application of social psychology in addressing social problems. The use and relevance of social psychological explanations, theories and methods in the study of real world issues will be examined.
The course will expose students to a variety of specific instances of the application of social psychology to areas of social and political interest and concern. Potential topics include environmental issues, international relations, media influences, health psychology, political decision-making, informed consent in experimentation, feminist social psychology, political extremism.

References

AY317  Stress and Coping
Three hours per week
Prerequisites or corequisites, AV311, AV314
(This subject is available only to students enrolled in the double major in psychology)
Assessment is based on a class test and a research project report.

After a review of historical developments in the use of such psychological concepts as trauma, anxiety, and stress, alternative formulations of stress, adaptation and coping are examined. Different perspectives on the conceptualization of normality/anormality are also considered. Selected influential models of stress and coping are explained, with particular reference to that formulated by R.S. Lazarus and his co-workers. Issues such as the measurement of life stress, the impact of stressors, subjective wellbeing, the role of social support and selected coping strategies are examined.

Selected applications are considered, including adjustment and stress disorders (DSM-III), the role of stress in health, the Type A behaviour pattern and approaches to stress management.

Reference

AY318  Advanced Methods of Data Analysis*
Two hours per week
Prerequisites or corequisites, AV313, AV314
(This subject is available only to students enrolled in the double major in psychology)
Assessment is based on data analysis assignments.

This course is intended to build on students' knowledge of basic analysis of variance and multiple regression procedures as tools for analysing data. Multivariate procedures will be discussed in detail, and this will centre around the SPSS MANOVA procedure: its uses, assumptions and limitations. Students will also be introduced to cluster, log linear, path and scaling analytical procedures.

References
Norusis, M.J. Advanced Statistics Guide. SPSS Inc. 1985

* NB. This course contributes one half unit to the degree unit total.

DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

Media Studies

The approach in this course is essentially analytical and critical, rather than production-oriented. In 1988 all first-year students will undertake a foundation subject — AM100, which examines how the media produce meanings and how media communication is understood and interpreted. Both second-year subjects — AM203 and AM201 — or their equivalents, are compulsory for entry into third year. AM302 and AM303 combined form a full-year radio production and criticism subject. The media studies major comprises one subject at stage one, two subjects at stage two, and three semester subjects at stage three.

Subjects offered
Code
Stage 1
AM100  Foundation Course in Media
Stage 2
AM200  Publishing and Broadcasting
AM201  Institutions and Media
Stage 3
AM300  Cinema Studies
AM301  Media Public Policy
AM302  Radio Production and Criticism A
AM303  Radio Production and Criticism B
AM306  Professional Attachment Program

Subject details
Stage one
AM100  Foundation Course in Media
Three hours per week
Prerequisite, nil
Assessment is continuous

The focus of this subject is on the production of meaning through the media, and particularly through film and television. The most useful critical accounts about the construction of meaning come from literature, art and cinema. Some of these accounts are beginning to be applied to television, and the various ways are examined in which television communicates meanings — through advertising, news, drama, soap operas and comedies. A detailed investigation of the role of the media in constructing social reality is undertaken.

Recommended reading
Sobchack, T. and Sobchack, V.C. An Introduction to Film. 2nd edn, Boston: Little, Brown & Co, 1987
Stage two

AM200 Publishing and Broadcasting

Three hours per week
Prerequisite, AM100 or equivalent
Assessment is continuous

This subject attempts to demystify the nature and processes of mass communication in its major forms, and its interrelationships with society.

There is a continuing examination of key political, social and ethical issues concerning press and broadcasting institutions in society, primarily in an Australian context. There is an assessment of the professional roles of public relations and advertising, and the opportunity to develop their writing skills.

There is an examination of the conventions and techniques of journalism, such as the nature of bias, subjectivity and balance in access and reform. Concepts important to the process of publishing are explored, such as the nature of bias, subjectivity and balance in the construction of content, self-censorship in journalism, legal constraints on public comment, media invasion of privacy, and freedom of information.

Journalism studied both critically and practically. There is an examination of the conventions and techniques of journalistic writing, to give students an insight into the demands of the publishing process and the opportunity to develop their writing skills. Students are encouraged to submit stories for publication.

References

AM201 Institutions and Media

Three hours per week
Prerequisite: AM200

This subject considers the Australian media within the wider context of a cultural-political entity. We examine definitions of Australian culture and the media in which Australian media and media institutions construct and foster these. We consider patterns of influence, especially American and English, in the constitution and maintenance of both media cultures and institutional frameworks. And we examine issues pertinent to Australian media culture in the context of contemporary Australian society, a context which includes increasing tendencies toward economic rationalization, multiculturalism, concentration of media ownership and uncertain public policy. Assessment will involve both individual essays and group projects.

References

Stage three

AM300 Cinema Studies

Four hours per week
Prerequisite, AM100 or equivalent, and both AM200 and AM201 or equivalent
Assessment is continuous

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 of Ingmar Bergman, 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 examining and developing various modes of criticism within the context of film theory. Attention is focused upon the structuralist and sociological studies, and their functions in relation to the humanist discourse which dominates more traditional critical work. The context, particular questions to do with the developing study of film will be on the agenda for ongoing consideration: for 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 the burden of usefulness of genre studies, and for the relationship between the film, the industry, and the culture in which they exist.

Assessment will be based upon essay presentation and class work.

References
Grant, B.K. (ed.) Film Genre Reader: University of Texas Press, 1986
Cinema Papers, The Journal of Popular Film and Television, Screen, Wide Angle

AM301 Information Society: Promises and Policies

Three hours per week
Prerequisite, AM100 or equivalent and both AM200 and AM201 or equivalent
Assessment is continuous

This subject is an examination of media and communications in the context of a post-industrial or information society.

Key questions about the rapid technological revolution are such as who decides about new technologies, and 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, and information, and the presentation of data and information. Students are encouraged to present their work in a form that will enable it to be available to the community.

References
Reinecke, R. Connecting You... Bridging the Communications Gap. Ringwood: Penguin Books, 1985
AM302 Radio Production and Criticism A
Four hours per week
Prerequisites: AM100 or equivalent and both AM200 and AM201 or equivalent
Assessment is continuous
This subject incorporates both radio production and criticism. It has an extensive production content in which all techniques basic to pre-recorded and live radio broadcasting are covered, including recording techniques, interviewing, scripting, narrating, editing and sound mixing.

Interwoven with this production work is a theoretical investigation where the medium is approached from a number of distinct but inter-related perspectives. An attempt is made to discover those aspects in which radio production and broadcasting are relatively unique from other media, along with those features shared with other forms of cultural production. This involves, for example, a study of the difference between speaking and writing, listening and reading as one step toward establishing a framework for radio criticism that is not merely a simple re-direction of the methods developed historically through the criticism of literature. Similarly, phenomena specific to the perception and cognition of sound is identified, and through extensive listening to sound, music and radio, a working vocabulary of sound analysis is developed.

Critical work will focus on Melbourne radio, commercial, public and government, which will be discussed from historical and contemporary perspectives.

Textbook
Swinburne Radio Production Notes

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
Four hours per week
Prerequisites: AM100 or equivalent and both AM200 and AM201 or equivalent and AM302
Assessment is continuous
In this subject, radio production skills are developed further and applied to a wide range of radio forms. Students have the option of working as part of a team producing a live weekly program on 3RRR FM or learning techniques of feature documentary, montage and radio drama production.

The role of radio within our culture is considered from two perspectives. Firstly through an analysis of the broad structural features of the medium and the consequences of these for the democratic creation and management of culture in our society, and secondly through a structural analysis of some of the features within the medium that set it apart from other means of mass communication. The role of the medium becomes clearer under the study of hierarchies of discourse operating within radio documentaries, accompanied by a consideration of the relationship between language and power in our society on the one hand, and the conditions imposed on the production of radio texts by radio work processes on the other. Students are required to carry out original radio criticism using Melbourne radio broadcasts as texts.

Textbook
Swinburne Radio Production Notes

References
As for AM302

AM306 Professional Attachment Program
15 days
Prerequisites: 5 Media Studies Subjects
Assessment is continuous
This subject is available during semester 2 to a limited number of students. Selection is made on the basis of the applicant’s academic excellence and overall commitment to previous course work. 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.
DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

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. See AP100, AP101, AP112, AP200, AP201, AP207, AP300, AP303 and AP308.

(b) social and political change in Asia. See AP104, AP111, AP204, AP206, AP304, AP307, AP311 and AP312.

(c) political economy of capital development with examples from Third World industrialised states e.g. AP113, 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, 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 minor, a major, or a double major. 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

Forell, C.R. How We Are Governed. 9th edn, Melbourne: Longman Cheshire, 1983 or Jaensch, D, An Introduction to Australian Politics. 2nd edn, Melbourne: Longman Cheshire, 1984

Subject details

Stage one

AP100 Australian Politics

Three hours per week

Prerequisite, nil

Assessment is by class work and essays

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.

Textbooks

Walter LaFeber, America, Russia and the Cold War. 5th edn, Harmondsworth: Penguin, 1985

References


AP104 Australia and South-East Asia

Three hours per week

Prerequisite, nil

Assessment is by papers and tutorial participation

This subject will focus on developing some understanding of Modern China and the region. Topics considered include studies of communist parties, and land reform, Sino-Western relationships, reform and modernisation, institutional change, education and ideology, issues and problems centering on these themes will be critically examined and discussed through the use of a variety of materials including documents, memoirs, biographies and path-breaking works of modern Sinologists. To an extent, it will then be possible to identify and appreciate some of the distinctive features of contemporary China.

Textbooks


This is the first in a new sequence of Australian Studies subjects. It begins by looking at national identity to see how different ideas of what it means to be Australian have developed during the last one hundred years. It goes on to explore the role of families in moulding gender identity. This is followed by a study of how people have defined themselves in terms of the work they do and then looks at the way cultural heritages have shaped ethnic identity. The subject concludes with a discussion of the social movements that have grown out of these collective identities.

**Textbook**

**API13 Asia: Politics and Development**
Three hours per week
Prerequisite, nil
Assessment by essays and tutorial participation

The course examines the political dimension of development in contemporary Asia. It will analyse economic changes in the Asia-Pacific region in context of the world economy and the prevailing political order. There will be particular focus on the rapid industrialization in Southeast and East Asia and its social-political ramifications. Topics include the politics of aid, agribusiness and the commercialization of food, export-oriented industrialization, politics and labour, repressive-developmentalist regimes, and technology and the environment.

**Preliminary reading**

**API202 Europe, Capitalism and The Third World**
Three hours per week
Prerequisite, any stage one political studies subject or approved equivalent but it is advisable to have taken AP103 or AP105
Assessment is by essays and tutorial participation

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 proletarianization, 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

**API204 Modern Japan**
Three hours per week
Prerequisite, any stage one political studies subject or an approved equivalent
Assessment is by tutorial participation and papers

Discussion centres around the problems of Japanese nationalism and 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 giant. 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**

**API206 Politics of China A**
(Subject can only be taken by students who have passed AP02C Comparative Pol China A or AP209 'Chinese Politics A')
Three hours per week
Prerequisites, one stage one political studies subject. AP111 Modern China is highly recommended.
Assessment is continuous

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, education policies and mass campaigns. By analysing the variety of theories, interpretations and commentaries, a major task will then be the attempt to explore the dimensions of some of these changes from the time of the Cultural Revolution to the present day.

**Textbooks**
AP207 Modern Australia
Three hours per week
Prerequisites, any stage one political studies subject or equivalent
Assessment is by essays and tutorial participation
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 then considers the impact of the Great Depression and prosperity 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.
Textbook

Stage three
AP300 Public Policy in Australia
Three hours per week
Prerequisites, AP100 or equivalent, two stage two political studies subjects
Assessment is continuous
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 Labor Government.
The ideology of the Hawke Government is considered and contrasted with that of the previous Fraser Government as well as former Labor governments. The role of Hawke as Prime Minister is looked at in particular, his consensus approach to the formation of economic policy.
The role of the bureaucracy is discussed and the adequacy of the structural reforms embarked upon by the Federal Government evaluated. Of central concern are the changes to the economic policy process and institutions and the prices and incomes policy. 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.
Reference

AP303 Politics of the USSR
This subject cannot be taken by students who have passed AP202 Comparative Politics The Soviet Union
Three hours per week
Prerequisites, two stage two political studies subjects
Assessment is continuous
The subject introduces students to a comparative analysis of political systems through a study of Soviet government and society. The principal objective is to provide a framework for comparing communist political systems, but not to the exclusion of comparisons with western political systems.
The approach is to view socialism as an alternative social and political framework for modernisation and development to that provided by western capitalism. The institutional frameworks are examined, together with the economic and social transformation of the USSR, in the problems encountered by 'developed socialism' in the USSR.
References
Lane, D. State and Politics in the USSR. London: Blackwell, 1984

AP304 Japan in Asia
Three hours per week
Prerequisites, no stage two political studies or equivalent
Assessment is by seminar participation and an essay
A study of Japan's involvement in south-east and east Asia since 1952. Students will be expected to investigate Japan's relationships with other states and to contribute to discussions of the implications and consequences of Japan's policies in the region.

AP308 Seminar in Political Studies
Three hours per week
Prerequisites, two stage two political studies subjects
Assessment is continuous
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.

AP311 Politics of China B
(This subject cannot be taken by students who have passed AP310 Chinese Politics B)
Three hours per week
Prerequisites, two stage two political studies subjects. AP111 Modern China and/or AP206 Politics of China A are highly recommended. Students who have not passed either of these subjects are advised to consult with the Convener of the subject before enrolling.
Assessment is continuous
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. On the basis of some appreciation of the issues and problems in domestic politics, topics include China's relations with other socialist countries, Maoist foreign policy, an examination of the value of cultural and technological exchanges with developed nations and Sino-Australian relations. Emphasis is also placed on China's present 'open door' policies.
Reference

AP312 Problems of Contemporary South-East Asia
Three hours per week
Prerequisites, two stage two political studies subjects. AP104 Australia and South-East Asia is highly recommended.
Assessment is based on class participation, a short seminar and a final paper of 3,000 words
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
Evans, G. and Rowley, K. Red Brotherhood at War: Indochina since the Fall of Saigon. Sydney: Pluto Press, 1985
Vickery, M. Kampuchea: Politics, Economy and Society. London: Frances Pinter, 1986
AP313  India — Uneven Development

Prerequisites, two stage two political studies subjects
Assessment is continuous

The course highlights the uneven character of development in India, relating it to the economic-political structure of Indian society. It explains why a country with an extensive and relatively advanced industrial base also suffers widespread poverty. The course deals with both the empirical and theoretical aspects of development in India. Topics include: ‘green revolution’ and class formation, land reform, agrarian relations, peasant conflict, industrialization, women in the labour force, caste and social status, and population and family planning.

Preliminary reading

DEPARTMENT OF SOCIAL AND POLITICAL STUDIES

Sociology

The sociology course is designed to provide an understanding of the social world in which we live and work. It deals with the individuals place in society and the social processes and institutions which shape individual and group behaviour and attitudes. Developing an understanding of these issues is not only intellectually rewarding but also important in a career sense. The conceptual and research skills acquired through the study of sociology are important in such employment areas as personnel management, social research, marketing, 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.

At Stage two, students are required to take AS204 Models of Sociological Analysis if they intend to pursue a major in sociology. Two stage two subjects are required for a major in sociology.

At stage three, students completing a major must take AS306 Methodology of Social Research and two others of the six subjects offered.

For those students intending to pursue a career in research and policy analysis the Graduate Diploma in Urban Research is offered.

Subjects offered
Code
Stage 1
AS100 Sociology 1A
AS101 Sociology 1B
Stage 2
AS200 Social Change
AS202 Sociology of Deviance
AS203 Political Sociology
AS204 Models of Sociological Analysis
Stage 3
AS300 Urban Sociology
AS302 Sociology of Organisations
AS303 Current Issues in Sociology
AS304 Sociology of Minorities
AS307 Social Research and Policy
AS306 Methodology of Social Research

Subject details

Stage one

AS100 Sociology 1A
(Individuals and social groups)
Semester one only
Three and a half hours per week daytime
or
Three hours per week evening
Prerequisite, nil, but note that AS100 and AS101 are normally taken in the one year
Assessment consists of essays and examination

This subject is concerned with people as social beings. It takes up the questions of how individuals become socially aware, how their ideas of appropriate behaviour and their views of society are formed by that society and what is the nature of the interaction an individual has with the surrounding social world. The emphasis is on small-scale processes such as role learning, gender development, socialisation, social interaction and ritual, and small group dynamics. In addition, some social institutions which most directly concern us in everyday life are examined, including the family and peer groups.

Teaching is mainly by lectures and tutorials, and films and videotapes are used.

Preliminary reading
Berger, P. Invitation to Sociology Harmondsworth: Penguin, 1975

Reference
This subject is an introduction to sociological ways of thinking about contemporary society as a whole, and particularly about Australia. It emphasises the empirical study of various aspects of Australian society and its social institutions, examined within the framework of macro-sociological theory. The central theme of the subject is social inequality and includes issues of poverty, unemployment, social class, gender, race and ethnicity, education and the distribution of social resources. Elementary methods of data analysis are taught but no statistical knowledge is assumed.

Reference

Stage two

AS200 Social Change
Three hours per week
Prerequisites, AS100 and AS101
Assessment is continuous

Industrial and technological changes have been the defining features of the developed societies over the past 150 years, accompanied by the struggles over their control. Sociologists, among other social analysts, responded to these phenomena by providing a range of explanations concerning the nature of human society. This subject concentrates on just a few examples of important changes and they are examined by reference to major sociological perspectives.

The emphasis of the subject is on technological change and social movements. Both are subjects which are discussed outside academic sociology and offer an opportunity to test the relevance of sociological theory as a means of understanding pressing contemporary problems.

Topics covered include sociological theories of social change, technological change, 19th century industry, late 20th century industry, changes in domestic life, literary representations of change, the women's movement and the conservation movement.

References

AS204 Models of Sociological Analysis
Three hours per week
Prerequisites, AS101 and AS102
Assessment is continuous

No application of sociological techniques can be productive without an understanding of the theoretical issues which inform sociological explanation. In this unit an examination is undertaken of the most influential social theories, their sources in 19th Century thought and their present-day formulations. The works of Marx, Weber and Durkheim and the 20th century writings which build on their ideas are discussed. Feminist theory and the issue of 'class' are also covered. Theories are examined for their core assumptions, ideological foundations and approaches to knowledge. The discussions are designed to enable students to see the practical relevance of these theoretical debates and to analyse contemporary writings on social issues, identifying their central ideas.

References

Faculty of Arts

AS202 Sociology of Deviance
Three hours per week
Prerequisites, AS100 and AS101
Assessment is continuous

Contemporary definitions of deviance include both the kind of behaviour traditionally considered to constitute social problems (for example — crime, delinquency, alcoholism, mental illness, prostitution, and homosexuality), as well as those areas which are important but traditionally under-emphasised by criminologists and sociologists. These include sexism, racism, unemployment, white collar-and corporate crime, government welfare and social control. The study of deviant behaviour and social control raises questions about the nature of social order and the use of power by decision-makers and control agents in ways that reinforce the dominance of more powerful groups over the less powerful in society.

The subject focuses different theoretical perspectives on deviance and the consequent variations in the ways it is studied, the methodology adopted and the types of results obtained. Such changing definitions of deviance also reflect historical and political changes within sociology, particularly the relationship between sociological research and social policy. An attempt is made to locate these questions within the context of Australian as well as overseas studies.

References

AS203 Political Sociology
Three hours per week
Prerequisites, AS100 and AS101 or an approved equivalent

For description of this subject see AP201 Political Sociology.

Stage three

AS300 Urban Sociology
Four hours per week, daytime or
Three hours per week, evening
Prerequisites, two stage two sociology subjects
Assessment consists of tests, class exercises, and an essay

This subject focuses on the relationship between urban theory and policy. A range of theoretical frameworks are used to provide an understanding of research and policy around issues of housing, inner-city redevelopment, suburban sprawl and spatial segregation. The role of the state and its relationship with the private sector in urban development is also examined.

References

AS302 Sociology of Organisations
Three hours per week
Prerequisites, two stage two sociology subjects
Assessment is continuous

This subject draws on a range of empirical studies of various types of organisations. These include the study of the various ways in which organisations have been identified and analysed and a consideration of the social contexts in which they operate. Organisational structures are controversial because they engage the interests of different social groups for a variety of reasons which are perceived by their proponents as rational or moral. Particular organisational forms are not merely more or less efficient for the realisation of goals, they have a political and ideological content and it is important to consider these main themes be emphasised. The major sections of the course are:
(a) major schools of organisation theory;
(b) bureaucracy and industrial society;
(c) the contemporary pressures for organisational change, including case studies of democratic and participative organisations.

References
Industrial Democracy and Employee Participation: A Policy Discussion Paper, Canberra: AGPS, 1986
AS303 Current Issues in Sociology

Three hours per week
Prerequisites: two stage two sociology subjects
Assessment: continuous

Within the discipline of sociology, there are several fundamental problems of explanation and debates over the appropriate approach to the subject matter. These issues pervade every substantive area in the discipline. In this unit, some of these issues as they are debated currently in the area of gender inequality are observed. The course focuses on various forms of social control concentrating on examples from reproductive technology, the justice system (women as offenders and as victims) and medical and mental health areas. The major writings on gender and social control are examined and those questions which are important, both for sociological explanation and for social action, are highlighted.

References

AS304 Sociology of Minorities

Three hours per week
Prerequisites: two stage two sociology subjects
Assessment: continuous

Minority groups pose some special problems of sociological explanation. In this subject minority situations are studied as particular instances of social inequality and this analysis is linked to general sociological perspectives on social structure. Three types of minority groups are considered. These are racial minorities, ethnic or cultural minorities and sexual minorities. Australian examples of each of these types including Assimilation, are considered and immigrants and women. Australian data are looked at in general theoretical terms and comparisons drawn with minority situations elsewhere, such as Britain, USA, New Zealand and South Africa. Issues related to minority dynamics include education and ideology, violence and coercion, policy initiatives for overcoming discrimination and inequality and prospects for mutual accommodation among disparate groups.

References
Bottomley, G. and de Pauw, M. Ethnicity, Class and Gender in Australia. Sydney: Allen & Unwin, 1986
Jennett, C. and Stewart, R. Three Worlds of Inequality: Race, Class and Gender. Melbourne: Macmillan, 1987

AS307 Sociology and Social Policy

Three hours per week
Prerequisites: two stage two sociology subjects
Assessment: continuous

This subject is designed to allow students to develop their understanding of the relationship between sociological research, theory and social policy. The subject reviews the major theoretical and ideological approaches to social policy and introduces students to some of the key processes in policy making, eg, problem identification, policy implementation, evaluation and monitoring. Particular attention is given to sociology of welfare and human service delivery. The subject is structured to allow for the possibility of students undertaking either individual or group projects as part of their required assessment.

References

SC173 Biology

Thirty hours of lectures
Thirty hours of laboratory work
Assessment is 80% theory, 20% laboratory

This subject is offered in the first semester by the Department of Applied Chemistry for students enrolled in the Bachelor of Arts program. No prior knowledge of biology or chemistry is assumed. The course introduces students to the basic biological unit, considers its functions and life processes, and 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. Renal system and water balance: structure of the kidney and urinary system. Basic renal processes. Regulation of extracellular volume and osmolality. Digestive system: the arrangement and functions of the digestive system. Skeletal system: calcium regulation, structure of bone. Anatomy of the skeleton. Muscular system: types of muscle and their roles. Mechanism of contraction. Conduction in the heart. 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 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.

AS306 Methodology of Social Research

Three hours per week
Prerequisites: two stage two sociology subjects including AS204
Assessment: continuous and usually based on one class test and assignments, including a major project

This subject is designed to provide an understanding of the importance and range of methodologies that link theory with social research practice, 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, explanation and policy. A range of examples from sociological research is used to illustrate the theory-research relationship and to evaluate the strengths and weaknesses of differing approaches. Consideration is given to methods of data gathering, data analysis and presentation of results, using both quantitative and qualitative strategies. Specific areas covered include social survey research, sampling, secondary data analysis, evaluation research and other research strategies.

References

Subjects offered by other faculties

Listed here are subjects taught by departments in other faculties which may be taken by students enrolled in a Bachelor of Arts course. Any Arts student wishing to take one or more of these subjects must have the approval of both the Faculty of Arts and the teaching department concerned as enrolment in the subject may depend on the availability of places and/or on certain prerequisites.

Course regulations specify that:
(a) students taking both majors within the Faculty may take subjects outside the Faculty up to a maximum unit value of six;
(b) students taking one approved major outside Faculty may take subjects outside Faculty up to a maximum unit value of ten.

(For the purposes of this regulation, the subjects SM278 and SM279, Design and Measurement 2A and 2B are regarded as subjects within the Faculty of Arts.)

Faculty of Applied Science

The following Applied Science subjects are available to Arts students:
During teaching of the above topics safety measures will be emphasized.

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 and the demonstration of cardiopulmonary resuscitation. Extensive use is made of anatomical charts, biological models and such specialised equipment as parameters and electrocardiographs. Microcomputers are used by students in exercises that simulate certain body functions.

SC174 Biology
Thirty hours of lectures
Thirty hours of laboratory work
Assessment is 80% theory, 20% laboratory
This subject is offered in the second semester by the Department of Applied Chemistry. Students enrolled in the Bachelor of Arts program. A knowledge of SC173 Biology will be assumed. The subject will consist of two components as described below.

Basic microbiology: an introduction to the microbial world to include the history, nature and scope of microbiology. Elements of the microbial world to range from viruses, rickettsia, chlamydia, bacteria, algae and blue-green algae to fungi and protozoa. Methods of handling micro-organisms, methods of isolation and methods of growth. Relationships between micro-organisms and pathogenicity.


SM278 Design and Measurement 2A
Four hours per week daytime
or
Three and a half hours per week evening
Prerequisites, AY100 and AY101
Assessment is continuous
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 introduction to computer based data analysis, one and two-way factorial designs and the corresponding analysis of variance.
Textbooks

SM279 Design and Measurement 2B
Four hours per week daytime
or
Three and a half hours per week evening
Prerequisite, SM278
Assessment is continuous
A stage two, second-semester subject in research design and statistical analysis that is designed to complement concurrent and future studies in psychology.
In this subject the topics include SM278. Emphasis is placed on the statistical analysis that will be used to perform the various statistical analyses.
Topics to be studied include correlation and an introduction to multiple regression, analysis of covariance, factor analysis and non-parametric methods.
Textbooks
As for SM278 and in addition:

References

SP250 Psychophysiology A
Five hours per week (3 hours lectures, 2 hours practical) during first semester
Prerequisites, AY100 and AY101
Assessment is continuous

SP251 Psychophysiology B
Five hours per week (3 hours lectures, 2 hours practical) during second semester
Prerequisite, SP250
Assessment is continuous

These subjects are designed to familiarise students with human physiological processes and those relevant to the study of psychology, and to introduce students to psychophysiological recording and monitoring techniques. This course is intended as a relevant option for students undertaking major studies in psychology. Psychophysiology A introduces the concept of cellular excitability and its application to the neuromuscular, autonomic, cardiovascular and endocrine systems. The influence of stress on these systems is reviewed. Emphasis is placed on techniques of recording physiological signals, e.g. in monitoring stress and biofeedback. Psychophysiology B focuses on neurophysiological and neuropsychological aspects of behaviour with an introduction to neuroanatomy, sensory and motor function followed by an examination of mechanisms of brain function, including emotion, language, learning, memory, sleep and consciousness. Some disorders of brain function and techniques of central nervous system activity monitoring are also covered.

References
There is no single prescribed reference for these courses. Students are referred to sections of suitable physiological and psychological texts and journal articles.

Faculty of Business
The following Business subjects are available to Arts students:

Economics
Economics is offered as a major in the Bachelor of Arts course. Arts students intending to take an economics major must discuss their overall study program with a course adviser in the Faculty of Arts to ensure that their study plans will satisfy the requirements for a degree.

The Department of Economics offers a wide range of subject units which may be taken individually, as a minor strand over two years, or as a major strand over three years.

To complete Faculty of Arts requirements for a degree major in economics the following subject units must be taken:

Stage 1
BE101

Stage 2
BE201 and BE202

Stage 3
three additional semester subjects from the list immediately above.

To complete an economics major as part of a Bachelor of Arts degree students are required to pass Economics 1 which is the equivalent of two semester subjects, and five semester subjects chosen from stages two and three as specified above, giving a total required of seven semester subjects.

Faculty of Arts
BE101 Economics 1

The main objective of this subject is to teach students how economists analyse economic problems within the framework of the Australian economic and business environment. The course commences by examining the role of the contemporary market system in allocating resources and distributing output. It then projects the firm's production costs and revenues in a variety of industries. This is followed by a detailed analysis of the determinants of the level and rate of change of national output, employment, prices and the rate of exchange. Attention is then focused on the role of fiscal, monetary, prices and incomes, balance of payments and exchange rate policies in achieving economic stabilisation.

References

BE201 Managerial Economic Analysis

Prerequisite, BE101 Economics 1

This unit deals with the structure, conduct and performance of industry in contemporary economies with special reference to Australia and considers the role of government in these economies. A study of an Australian industry is an integral part of the course. Monopoly and modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry regulation and policy are discussed.

Textbook

References

BE202 Industry and Government

Prerequisite, BE101 Economics 1

This unit aims to equip students with an understanding of the Australian Industrial Relations system with some comparative reference to other countries. As well as examining the development of our present system, current issues will feature prominently during the semester so that students will gain an understanding of how industrial disputes begin and affect the economy. To further comprehend the processes involved in the resolution of industrial conflict students will participate in several simulation exercises. The learning experience will therefore include a large element of student participation in addition to formal class work.

Topics to be studied include:
- the nature of industrial conflict
- the manifestation of industrial conflict
- the development of Australia’s Conciliation and Arbitration Commission
- the Award Making process
- Employer Associations
- Trade Unions
- the National Wage
- worker participation and industrial democracy.

BE203 Industrial Relations

Prerequisite, BE101 Economics 1

This unit involves an analysis of the economic rationality of government expenditure and revenue raising. It will cover the following topics:
(1) an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure;
(2) 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 tax; subsidies to commodities and consumers; taxes on the factors of production and proposals for reform of the Australian tax system;

References
Brown, C.V. and Jackson, P.M. Public Sector Economics. 3rd edn, Oxford: Basil Blackwell, 1986

BE301 Public Finance

Prerequisite, BE101 Economics 1

This unit involves an analysis of the economic rationality of government expenditure and revenue raising. It will cover the following topics:
(1) an introduction to the welfare economics and public choice paradigms and their implications for public sector revenue and expenditure;

References

BE302 Economic Research

Prerequisite, BE201 Managerial Economic Analysis or BE202 Industry and Government

In this unit, the aim is to broaden students' familiarity with the nature and scope of research undertaken in economics and to increase students' ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course. Extensive use is made of current journal articles.

BE303 Monetary Economics

Prerequisite, BE101 Economics 1

Objectives
To provide students with:
(1) an understanding of the major monetary theories and implications of these theories;
(2) knowledge of the structure, functioning and development of Australian and international financial institutions and markets; and
(3) an appreciation of the nature and workings of the Australian monetary system and changes in this system and for society.

Course outline
Monetary theories — classical, Keynesian, modern quantity, Neo-Keynesian, Australian and international finance markets — nature and developments. Australian monetary system and change — nature of change, analysis of implications of change for monetary and financial systems.

Textbook

References
BE304 International Economics
Prerequisite: BE101 Economics 1
This unit provides a study of international finance and trade with special reference to Australia. Topics covered include: the nature of foreign exchange markets and the determination of exchange rates; balance of payments adjustment mechanisms; internal and external policy mixes — Australian policy aspects; international financial arrangements — historical developments, and current issues; the basis of International trade and the determination of trade patterns; trade restrictions; alternative approaches to industry assistance policies — current debate; international issues and economic integration.

References
Lindert, P.H. International Economics, 8th edn, Homewood, Ill: Irwin, 1986

BE305 Urban Economics
Prerequisite: BE101 Economics 1
In this unit, students develop an analytical approach to appraising urban problems and policies. The unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and human resources delivery.

References

BS465 Urban and Regional Economics
This subject appears in the postgraduate subject details under Urban Research and Policy.

Other Business subjects offered
See the Faculty of Business Handbook for full details of:
BC101 Accounting 1A
BC102 Accounting 1C
BH101 Organisations and Management
BL101 Legal Environment of Business
BM101 The Marketing Concept
B1101 Information Technology

Mathematics
Mathematics subjects can be chosen as part of study towards an Arts degree. Students wishing to study Mathematics will need to consult with the Mathematics Department.

Double Degree Bachelor of Business1 Bachelor of Arts (Japanese)
The double degree Bachelor of Business Bachelor of Arts (Japanese) is of four years’ duration and is designed to enable students to complete the compulsory requirements for any of the Business degree streams together with the full range of the available Japanese subjects in order to qualify for the award of two degrees.
The four Business specialisations listed below are available for combination with Japanese.

First year (common to all four Business degree streams)
BC101 Accounting 1A
or
BC102 Accounting 1B
BC103 Accounting 1C
BE101 Economics (~ 2 units)
BH101 Organisations and Management
BL101 Legal Environment of Business
BM101 The Marketing Concept
BT101 Information Technology (~ 2 units)
SM147 Quantitative Analysis A
or
SM148 Quantitative Analysis B

Students do not have to identify which major stream they intend to study until enrolling for second year subjects.

Accounting
(10 mandatory, 7 Japanese subjects and 1 further elective)
Cost Accounting
Management Accounting
Contract Law
Quantitative Management Techniques
Corporate Accounting
Law of Business Organisations
Taxation
Financial Management
Accounting Theory
Auditing

Computing (1987 revision)
(8 mandatory, 7 Japanese and 3 further electives)
Information Analysis
Commercial Programming
Data Base Management Systems
Data Communications
Systems Development Strategies
Systems Software
Industrial Project (2 units)

Economics — Marketing
(10 mandatory, 7 Japanese subjects and 1 further elective)
Managerial Economic Analysis
Industry and Government
Economics Techniques for Business
Marketing Behaviour
Marketing Strategy
Marketing Research
Product Management
One third year Economics unit
Two further units from either Economics and/or Marketing

Marketing
(10 mandatory and 7 Japanese subjects and 1 further elective)
Marketing Behaviour
Marketing Strategy
Marketing Data Management
Accounting for Marketing 1
Organisation Behaviour 1
Marketing Research
Product Management
Strategic Market—nasses
Marketing and the Law
• one elective unit which must be a third year Marketing—nass
Japanese (major sequence)
Japanese 1
Japanese 2
Japanese 3A
Japanese 3B
Introduction to Japan
Communication in Japanese
Modern Japan

The elective subject(s) may be taken from either the Faculty of Arts or Business.

Double Degree Bachelor of Business1 Bachelor of Arts (Italian)
The double degree Bachelor of Business Bachelor of Arts (Italian) is of four years’ duration and is designed to enable students to complete the compulsory requirements for any of the Business degree streams together with the full range of the available Italian subjects in order to qualify for the award of two degrees.
Details of the four Business specialisations available for combination with Italian are as detailed under Bachelor of Business/Bachelor of Arts (Japanese).
The subjects offered within the Arts Faculty are as follows:
Italian 1
Italian 2
Italian 3A
Italian 3B
Italian Literature 3
Common Market Politics
Italian Business Practice
The elective subject(s) may be taken from either the Faculty of Arts or Business.
Postgraduate courses

NO84 Graduate Diploma in Applied Psychology

The course is offered as a one year full-time or two years part-time program. It is designed for students who have completed a first degree with a three-year major sequence of studies in Psychology undertaken in a course (or courses) approved for this purpose by the Australian Psychological Society. The program is intended to complete students' foundation studies in psychology as a science and as a profession. The course is designed to prepare students to enter the profession by meeting the educational requirements for Associate Membership of the Australian Psychological Society.

The course has the following objectives:

(a) to enable students to understand and apply the principles of social science which underlie the discipline of psychology;
(b) to enable students to acquire knowledge of the principles of social science research design and analysis;
(c) to enable students to extend skills in formulating research problems, gathering and analysing data, interpreting and communicating research findings;
(d) to enable students to acquire advanced knowledge in selected topic areas within psychology and applied psychology, building upon and extending basic undergraduate preparation;
(e) to provide students with an understanding of the nature of psychology as a profession, the ethical, moral, legal and social responsibilities of the psychologist, and the role of the Australian Psychological Society;
(f) 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.

Entrance requirements

Application for the Graduate Diploma is made on the Institute's standard graduate studies application form. Applicants with good undergraduate grades in psychology are interviewed by the Graduate Diploma Program Co-ordinator. The Co-ordinator 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 or college of advanced education; and
(b) have completed a three-year major sequence of studies in psychology in a course, or courses, approved by the Australian Psychology Society as published in its Bulletin;

or

2. have equivalent overseas qualifications.

In those cases where an applicant meets the requirement of 1(a) above, but does not meet the requirement 1(b), he or she may apply to complete all or part of the undergraduate psychology program at Swinburne Institute of Technology in order to become eligible to make application for entry to the Graduate Diploma.

Course structure

The program is organised around a system of 'core' subjects and 'options', that vary in unit weighting. This weighting reflects the work requirements of each subject in the program. In order to fulfil the requirement for the award, a student must satisfactorily complete all the Core subjects (14 units), any two 3-unit options (6 units) and any two 2-unit options (4 units). This course structuring 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. It also permits students to exercise some choice in selecting subjects in which to develop advanced knowledge and skills consistent with their career aspirations.

The range of subjects and their unit values are as follows:

Core subjects

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY401</td>
<td>Research Design and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>AY413</td>
<td>Research Project and Thesis</td>
<td>2</td>
</tr>
<tr>
<td>AY414</td>
<td>Computer Use in Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AY422</td>
<td>Ethical and Professional Issues</td>
<td>2</td>
</tr>
</tbody>
</table>

3-unit options

- two of these must be completed:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY400</td>
<td>Applied Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>AY406</td>
<td>Small Group Processes</td>
<td>3</td>
</tr>
<tr>
<td>AY411</td>
<td>Counselling in the Human Services</td>
<td>3</td>
</tr>
</tbody>
</table>

2-unit options

- two of these must be completed:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY420</td>
<td>Assessing Persons and Environments</td>
<td>2</td>
</tr>
<tr>
<td>AY426</td>
<td>Special Applications (Placement)</td>
<td>2</td>
</tr>
<tr>
<td>AY429</td>
<td>Personality and Social Development</td>
<td>2</td>
</tr>
</tbody>
</table>

The course can be completed in one year of full-time study extending across two semesters. In first semester a student will be involved in 12 hours of class contact time per week. In second semester a student will be involved in 6 hours of weekly class contact time and will also be consulting regularly with an academic supervisor about data analysis for the research project and the writing of the thesis.

The course can be completed in two years of part-time study extending over four semesters. A part-time student typically has weekly class contact hours as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
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<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>3</td>
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<td>4</td>
<td></td>
</tr>
</tbody>
</table>

A student will also be involved in weekly consultation with an academic supervisor about data analysis for the research project and the writing of the thesis.

Subject details

AY400 Applied Social Psychology

Lectures: 1 hour per week
Seminar: 2 hours per week
Assessment: Seminar presentation and literature review

AY401 Research Design and Analysis

Lectures: 1½ hours per week
Seminar: ½ hour per week
Assessment: Empirical research proposal

Principles of research design.
Development of a research proposal.
Social survey techniques.
Questionnaire construction.
Interviewing.
Experimental methods.
Principles of data analysis.
Reporting research.

References

AY405 Small Group Processes

Laboratory: 3 hours per week
Assessment: Participation (including the conduct of in-class group learning activities) Essay 65%
Contemporary theory and practice in small group psychology.
Models of leading small groups.
Measurement and assessment of group structure and processes.
Development of group process observation, group participant and group facilitation skills.

References

AY411 Counselling in the Human Services

Lectures: 1½ hours per week
Prerequisite: AY405
Assessment: Practical examination 50%
Theory examination 50%

Contemporary theory and research on relationship factors in counselling and interviewing.
Models of training in counselling and interviewing.
Models of supervision in counselling and interviewing.
Human services systems.
Models of counselling service delivery systems.
Evaluating and monitoring counselling service programs.

References
Egan, G. The Skilled Helper. 3rd edn, Monterey, California: Brooks/Cole, 1986

AY413 Research Project and Thesis

Independent research under supervision
Assessment: Submission of a minor thesis (5,000-12,000 words), assessed by two examiners

Each student is required to formulate a individually empirical/research proposal, 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 minor thesis.

The student project may take any one of the forms of field observation, case studies, field surveys, laboratory 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 recognized 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 Psychology Department will be assigned to supervise the research. Supervisor and student will be expected to meet regularly for consultation according to a mutually agreed timetable.

The conduct of the research overall must conform in all respects to the principles of research ethics stated in the Psychology Department's Statement of Research Ethics.

References

AY414 Computer Use in Psychology

Lectures: 1½ hours per week
Practical classes: 1 hour per week
Assessment: Class test on SPSS PC+ and SPSS-X

Introduction to the IBM 3090 mainframe and TSO; Introduction to the IBM PC microcomputer and MS-DOS.
Editing techniques: using EDIT on the IBM 3090 and the SPSS-PC+ REVIEW editor on the IBM PC.
Principles of data analysis using SPSS.
Data transformation and recoding in SPSS.
Batch and interactive modes in SPSS.
Basic techniques in word processing.
Special applications.

References

AY420 Assessing Persons and Environments

Lectures: 1 hour per week
Workshop: 1 hour per week
Assessment: Examination 40%
Measurement exercise 40%

History of psychological measurement, significant developments, present status and pattern of test usage.
Using interviews and behavioural observations.
Assessment in particular applications: clinical, educational, vocational, personality function, neurological and psychomotor, interpersonal behaviour, environments. Computer administration, scoring and interpretation.

References
AY422 Ethical and Professional Issues

**Lectures:** 1 hour per week

**Seminars/class exercises:** 1 hour per week

**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.

Topics will be selected from the following:

- Psychology as a profession: The Australian Psychological Society and requirements for registration in the State of Victoria
- Confidentiality, report writing and supervision
- Quality assurance, peer evaluation and professional negligence.
- Philosophical and professional issues in morality and ethics: professional problems
- Values and attitudes in social research
- Mental health legislation, the psychologist as expert witness
- Psychology and the law: forensic psychology; the psychologist as expert witness; counselling in the Family Court, etc.

**References**


AY426 Special Application

**Fieldwork placement**

**Assessment:** Satisfactory completion of the fieldwork program

Students who make application on the basis of demonstrated vocational relevance will be permitted to undertake a period of approved practical work in a Psychological Services Unit under the direct supervision of a professional psychologist. This work will normally involve areas of applied psychology such as social survey research, personnel selection, occupational health and safety, test construction and development, counselling services, educational research.

Students intending to undertake such a program will be required to prepare a detailed proposal which must be jointly agreed upon by the supervising psychologist and the member of the Psychology Department assigned to monitor the fieldwork placement. The program will involve assigned reading, regular consultation between the student and the supervisor and the co-ordinator, the keeping of a work diary by the student, and the submission of a report of 3,000-4,000 words on the placement and the issues of practice highlighted by the placement.

A minimum of 120 hours must be spent in the field.

**Reference**


AY429 Personality and Social Development

**Lectures:** 1 hour per week

**Seminars:** 1 hour per week

**Assessment:** Theory: research essay 100% (1,500-2,000 words)

This subject examines selected contemporary issues of psychological theory and practice concerning personality development and social behaviour. Topics covered may include:

- Lifespan development models
- Models of personality
- Couples, marriage, the family
- Career choice and career development
- Personality dysfunction: Axis II of DSM-III-R
- Ageing

**References**


NO86 Graduate Diploma in Equal Opportunity Administration

This graduate diploma is offered as a one year full-time or two years' part-time course. It has been designed to meet the training and education needs associated with legislative and social initiatives in equal opportunity and affirmative action.

The objectives of the course are:

- (a) to develop an understanding of the principles and operation of equal opportunity through exploration of key issues and practical experiences;
- (b) to increase understanding of organisations, including their systems and operations;
- (c) to provide participants with analysis of case studies to assist with the development and implementation of similar initiatives within organisations which they choose to study;
- (d) to provide a range of skills that are necessary for successful equal opportunity program administration: researching, information gathering, change agent skills, facilitating skills, developing strategies, researching, information gathering, change agent skills, facilitating skills, developing strategies, networking, decision-making, report writing and communication skills;
- (f) to increase the confidence and competence of equal opportunity practitioners;
- (g) to contribute to improvements in the quality of equal opportunity initiatives in the state.

**Admission 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 the selection of participants:

- Work with groups with special needs
- Personnel management
- Industrial relations
- Unions
- Equal Opportunity programs or 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:

**AE400** Principles of Equal Opportunity and the State

- Data Usage and Evaluation
- Equal Opportunity and the Workplace
- Equal Opportunity Implementation

**Subject details**

**AE400** Principles of Equal Opportunity and the State

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 in Australia are examined.

Other issues covered include:

- Basic concepts used to understand equal opportunity such as discrimination, target groups, race, gender, ethnicity, disability, harassment, labour market discrimination.
- 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
This subject provides participants with training in skills needed to analyse and evaluate staffing profiles for the purposes of equal opportunity administration. In addition to instruction in basic data compilation and presentation, the following topics will be covered:
Accessing existing data sources, determining new data sources within the organization, organizing a data bank, qualitative and quantitative research methods, data analysis, issues of confidentiality and ethics, monitoring techniques and models of evaluation.

AE402 Equal Opportunity and the Workplace
The skills and knowledge gained in this subject will help participants understand workplace dynamics and to operate as effective equal opportunity administrators. It will also raise issues of workplace organization as they affect employees in general and target groups in particular. Topics covered include:
The structure and nature of organizations, formal and informal administrative practices, conditions of employment, the special needs of particular groups and the effects of organizational change on various groups within the organization.

AE403 Equal Opportunity Implementation
This subject has a strong practical orientation and is designed to assist participants to formulate and implement affirmative action programs in their place of employment. For those who are not currently employed, placements with organizations will be sought. This subject is done at the end of a student's course and draws on the concepts and skills learned in subjects studied earlier. Emphasis is placed on creating policies and procedures which will enhance equal opportunity within a particular organization. Participants will carry out individual implementation projects under the supervision of staff which will be complemented by discussions of the issues involved in implementation programs.

Graduate Diploma in Italian
Subject to VPSAC accreditation the Faculty of Arts will offer a Graduate Diploma in Italian. Further information is available from the Humanities Department.

NO83 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. Specific training is focused on reading, aural comprehension and speaking.
The course has been planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language and reach a stage where they have linguistic competence to deal with a wide variety of topics in the written and spoken language. Development of competence in grammar, particularly the understanding of long and complex sentence structures, and the acquisition of a wide vocabulary range, including a large number of characters, is essential. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in translation and precision writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course.
Language development is focused on four major areas of Japanese studies: social, cultural, business and political.
Students consider:
(a) general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and
(b) the validity of assertions and generalisations which are made by Japanese, as well as by foreign writers.

Entrance requirements
Application for the Graduate Diploma is made on the Institute’s standard graduate studies application form.
Applicants must have a degree with a major in Japanese language, or equivalent, from a recognised university, college or institute. All applicants are assessed by a selection committee and in certain cases 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 and each involves four hours of class meetings per week. Usually, students enrol for two subjects concurrently in each of the four semesters but may in special circumstances, enrol for only one subject per semester.

Subjects on Japanese society and culture, and on business and politics are offered in alternative years. Reading materials are available through the department. In all subjects students are required to complete one research project and two tests.
The subjects offered at present are:
AJ400 Japanese Society A
AJ401 Japanese Society B
AJ402 Japanese Culture A
AJ403 Japanese Culture B
AJ404 Japanese Business and Industry A
AJ405 Japanese Business and Industry B
AJ406 Japanese Politics A
AJ407 Japanese Politics B

Preliminary reading

References

Subject details
AJ400 Japanese Society A
This subject provides an introduction to problems which exist in Japanese society. The topics cover family problems, old age and social security, social problems relating to crime, suicide, gangster organisations, youth violence; dietary life and common diseases; female inequality, and theories on Japanese society. The program is based mainly on newspaper items but some media broadcasts are included and specialised lectures lead seminars on certain topics. Students have the opportunity to deliver individual reports to improve their spoken Japanese.

AJ401 Japanese Society B
Students extend their reading of topics introduced in Japanese Society A and also develop their conversational skills in this subject.

AJ402 Japanese Culture A
In this subject topics covering various aspects of modern Japanese culture studied, for example, Koreans in Japan, Japanese repatriates from China, education, corruption, Japanese language, media, arts, sport, Japanese abroad and international understanding.
### AJ403 Japanese Culture B
This subject allows students to extend their reading of topics introduced in Japanese Culture A and to develop their conversational skills.

### AJ404 Japanese Business and Industry A
This subject covers topics related to business, for example, employment and working conditions; advanced technology; structure of industry; trade friction; automobile industry; Japan and world trade; energy and tertiary industry. Most of the material on which the program is based is selected from newspapers but some media broadcasts are also included. Emphasis is on the acquisition of vocabulary, characters and some practice in translation and precis writing. Students have the opportunity to deliver individual oral reports to improve their spoken Japanese.

### AJ405 Japanese Business and Industry B
Additional reading which extends the topics introduced in Japanese Business A is covered. Here the emphasis is placed on the acquisition of vocabulary, characters and some practice in translation and precis writing. Students also develop their conversational skills in this subject.

### AJ406 Japanese Politics A
In this subject students are introduced to various aspects of the Japanese political system through the reading of newspaper articles supplemented by some media broadcasts. Topics include political parties and elections, Japan-Australian relations, textbook controversy, defence, anti-nuclear movements, administration, government interference, politicians travelling abroad, environmental protection and refugee policy.

### AJ407 Japanese Politics B
This subject covers reading and conversation which extends to topics introduced in Japanese Politics A.

### NO87 Graduate Diploma in Japanese for Professionals
The Graduate Diploma in Japanese for Professionals is an intensive language course specifically designed to provide graduates with no previous studies of Japanese with 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
Application for the Graduate Diploma in Japanese for Professionals is made on the Institute’s standard graduate studies application form. Applicants must have a degree, and be employed, or have prospects of employment in an area requiring Japanese language skills and knowledge of the cultural, social, political and economic aspects of contemporary Japan.

### Course structure
**Language Component:** 6 hours per week over 4 semesters.

**Year 1**
The language component in Year 1 includes basic grammar, situational dialogues, aural comprehension and reading/writing sections which provide students with the basic knowledge of the mechanics of the language.

**Year 2**
The language component at the second year level is divided into a ‘core’ segment of advance grammar which is taken together by all students, and ‘special purpose’ modules which are studied by groups of students with common professional language needs. The modules concentrate on spoken and written language applicable to different professional domains.

**Supporting components** equivalent to 2 hours per week over 4 semesters.

The four supporting components include culture, society, politics and economy. These components take the form of five 3 hour seminars per semester.

### Subject details

#### AJ420
All students take this subject in first semester of first year. In addition to an introduction to the basic features of Japanese grammar, reading, speaking and writing. The language component will be assessed by regular tests and assignments and all students must present a seminar paper and write a research essay on some aspect of Japanese history.

#### AJ421
This subject is taken in the second semester of the first year. All students will continue their study of basic Japanese grammar, reading, speaking and writing. The language component will be assessed by regular tests and assignments and all student will present a seminar paper and write an essay on some aspect of Japanese society.

#### AJ422
This subject is taken in the first semester of the second year. All students attend background seminars and advanced grammar classes. Students will be divided into smaller groups which study ‘special modules’ of language usage related to their professional needs. The language component will be assessed by regular tests and assignments and all students will attend advanced grammar classes and seminars. The language component will be assessed by seminar paper and essay.

#### AJ423
This subject is taken in the second semester of the second year. Students will continue the study of ‘special modules’ in professional contexts, and all students will attend advanced grammar classes and seminars. The language component will be assessed by regular tests and assignments and the background component will be assessed by seminar paper and essay.

**Assessment**
Students are expected to complete regular tests and assignments for the ‘core’ language components, and an essay/research assignment for each of the supporting components.

### References
AJ420 and AJ421:
The following texts are required:
- Melbourne: Swinburne Press, 1987

Tapes to accompany these texts are also available. Reading lists for the background component are available from the Japanese Centre.

AJ422 and AJ423:
A detailed list of required texts and background reading lists may be obtained from the Japanese Centre.
Graduate Diploma in Japanese

Subject to VPSEC accreditation the Faculty of Arts will offer a second Graduate Diploma in Japanese for people with no prior knowledge of the language. Further information is available from the Humanities Department.

NO82 Graduate Diploma in Urban Research & Policy

This course is designed to supplement students' general education by providing them with the practical and conceptual skills necessary to work effectively or secure employment in the fields of planning, urban administration, community development and research. More specifically the course aims to develop students' knowledge and experience in:

(a) the analysis of Australian urban development and the social and economic problems that derive from this development;

(b) the formation and characteristics of national, state, and metropolitan policies affecting the urban environment;

(c) the use of techniques and skills relevant to urban research and planning, and policy formulation and evaluation.

Entrance requirements

Application for the Graduate Diploma is made on the Institute's graduate studies application form. Applicants must hold a degree or diploma from an approved tertiary institution, including major studies in at least one of:

- Geography, planning or contemporary history;
- Other studies not listed but others may also be considered.

Course structure

The course entails one year of full-time study or two years' part-time study, involving eight semester subjects and a research report. Each subject usually involves three hours of class meetings per week for one semester.

The following subjects will be offered in 1990:

- AS400 Urban Social Theory
- AS402 Urban Policy
- AS403 Research Report
- AS404 Advanced Urban Research
- AS410 Contemporary Issues in Urban Studies
- AS411 Urban Research
- AS412 Urban Politics and Administration
- AS413 Applied Social Planning
- BS465 Urban and Regional Economics

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

Subject details

AS400 Urban Social Theory

This subject is designed to introduce students to the major theoretical perspectives used by social scientists to examine urban development and to develop an understanding of the role of the State in urban society.

AS402 Urban Policy

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 include population, housing, land-use, transport, and public service provision will be used to exemplify issues, and experts in various policy areas participate in the course.

AS403 Research Report

This subject provides students with the opportunity to gain research experience by carrying out a research study under staff supervision and presenting the results of the study in the form of a report. The report is one of the major requirements of the graduate diploma course.

AS404 Advanced Urban Research

This subject offers more intensive first-hand training in research methods than that offered in AS403. Students undertake a research project under staff supervision through computerised analysis of a final report. The program will train students in survey design, data collection, interviewing, coding, computing, and analysis. For students undertaking an empirical analysis in their research projects or for students seeking employment as research officers, this subject provides additional training in urban research.

AS410 Contemporary Issues in Urban Studies

This subject will examine contemporary urban issues that warrant specific analysis. It will provide students with a further opportunity to apply major theoretical frameworks and urban research skills to the analysis of major substantive issues to the development of appropriate policy and planning strategies. Issues that might be examined include housing, health care delivery, labour market change, ageing and immigration.

AS411 Urban Research

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 some of the major current issues for Australian urban research; and thirdly, to develop a limited competence in basic research skills. This is an introductory statistical subject and introduces students to the SPSS (Statistical Package for the Social Sciences) for purposes of data analysis.

AS412 Urban Politics and Administration

This subject examines the nature of public and private decision-making as it affects the development and form of urban policy. Attention is given to different models of decision-making, the construction of innovation-making, and decision-making structures. Case studies are used to exemplify ideas and themes.

AS413 Applied Social Planning

In this subject the role of the social scientist in the social planning process is examined. While emphasizing the important role of the social scientist in critically appraising assumptions and evaluating contemporary planning, this subject is predominantly skills oriented. Particular attention is paid to the techniques of needs surveys, evaluation, social indicators, and secondary data analysis.

BS465 Urban and Regional Economics

This subject is designed to introduce students to the economic analysis of urban economics as they apply to the city. Particular attention is given to techniques of economic analysis such as cost-benefit analysis, cost accounting, land-use planning, and demand forecasting. Techniques to which the principles of techniques are applied include housing, transport, and local government.

N090 Master of Arts

The degree of Master (by research and thesis) may be undertaken within the Faculty. Applications for masters' candidature may be made by persons whose first degree or diploma has been completed to a sufficiently meritorious standard or whose background and experience is considered suitable. In the first instance, enquiries should be directed to the Head or Chairman of the appropriate department.
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Victoria
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Graduate □ Undergraduate □
I expect to complete my degree in (year):
_________________________
Institution where studies are being/have been undertaken:
_________________________________
Name:
Address: PIC:
### Courses offered in the Faculty of Business

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<td>Four subjects</td>
<td>It is advisable to have studied mathematics to at least Year 11</td>
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<tr>
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**Faculty of Business**

Entrance requirements

The normal entry requirements for the Bachelor of Business are:

- **VCE(HSC)** (previously accredited by VISE)
  - Grade D (or better) in four Year 12 subjects including English.

The subjects must have been taken in the one year. It is recommended that applicants have a background in mathematics at least to Year 11.

**Victorian Certificate of Education** (Tertiary Orientation Program)

It is recommended that applicants have a background in mathematics at least to Year 11.

**Other qualifications**

Applicants must have gained a qualification deemed by the Victorian Curriculum and Assessment Board to be the equivalent of the above. Such qualifications would include intermediate and overseas qualifications and certificate studies at a TAFE college.

Special entry

For applicants who have not satisfied a Year 12 course of study and who are not less than 25 years of age, a special entry test will be required.

**Quota**

Not all qualified applicants will be accepted because of the limited number of available places.

**Applications**

- Full-time all years: to Victorian Tertiary Admissions Centre
- Part-time all years: to Swinburne
- Victorian Certificate of Education (Tertiary Orientation Program)

The VCE(TOP), which precedes the first or common year is recognised as a VCE Year 12 equivalent. Details of this program appear in the Swinburne College of TAFE Handbook. Common first year

All undergraduate students in the Bachelor of Business follow a common first-year program which consists of introductory studies in accounting, economics, computing, marketing, organisations and management, quantitative methods and business law.

**Second and third years**

In second year students must choose one of accounting, computing, marketing, or economics-marketing as a major area of study, and from a wide choice of electives, to complement these majors for the remainder of the course.

**Bachelor of Business (BBus) courses**

The degree course leading to the award of Bachelor of Business offers major studies in accounting, computing, marketing, or economics-marketing, and special elective studies in accounting, economics, computing, human resource management, law, marketing, and quantitative methods.

Key features of the four major streams are as follows:

**A050 Accounting stream**

This course comprises a major study in accounting, together with the business-related areas of commercial computing, law, marketing, management, economics and statistics. This diversity of disciplines supporting the accounting content results in the degree course providing an excellent base for either a specialist career in accounting or a stepping stone to a management career.

Students are exposed to contemporary business practices and the concepts, and technology supporting modern business today. In particular, micro-computing facilities will be used in appropriate accounting units.

Graduates in accounting are in high demand at present in the accounting profession, industry, commerce and government. The employment opportunities available cover many diverse and challenging fields. Accountants in public practice offer specialist services in such areas as taxation, audit, and management. Accountants in industry, commerce and government cover the complete range of services necessary for the successful operation of business activity.
Some graduates in accounting never take up careers in what could be technically described as accountancy. The analytical skills and the understanding of accounting gained through a basic qualification, stand one in good stead to pursue any one of a number of different career paths in the business world in both the public and private sector.

Satisfactory completion of the course satisfies the educational requirement to enable graduates to join the Australian Society of Accountants (as a provisional member) and/or the Institute of Chartered Accountants (as a student member). These are the two major professional accounting bodies in Australia, membership of which is recognised world-wide. Further advancement in these professional bodies is dependent on successful completion of additional prescribed programs (such as the Certified Practising Accountant (CPA) Program of the Society or the Institute’s professional year).

A051 Computing stream

In today’s world, information technology has pervaded every aspect of business organisation. Growth has been explosive over the last five years, consequently demand for trained personnel has increased dramatically. Swinburne’s degree in computing offers a means of entry into this exciting field. To operate effectively in this modern business environment requires a familiarity with the computing hardware and software that is used to solve business problems. The course satisfies this need through practical work which is an integral part of every computing unit, and involves the use of micro, mini and mainframe computers. Further practical work in the development of computer systems is gained in an industrial project in third year.

Graduates are employed in a variety of careers by a variety of employers. A number of organisations, large companies and banks for example, employ graduates on the normal career path of programmer, systems analyst and manager. In contrast, graduates employed by small firms can expect to be given a broader range of activities, and may find themselves programming, analysing or designing systems as the situation demands.

Suppliers of hardware and software require graduates to provide support to their customers. A computer manufacturer requires support for hardware and associated software supplied to customers, whereas a chartered accounting firm will require graduates to design, implement and support business computing systems. Swinburne graduates have occupied all of these positions, and have risen to highly paid managerial jobs.

Completion of the course satisfies the educational requirements for membership of the Australian Computer Society.

A052 Economics-Marketing stream

Understanding economic principles is a fundamental requirement for a career in business. The economics-marketing stream applies modern economic and marketing concepts to analysis and decision-making in both the public and private sectors. The course has been designed for students intending to pursue careers in a wide variety of areas. The economics and marketing strands within the course complement each other and provide graduates with a comprehensive and clear understanding of the business environment.

Economics is a disciplined way of approaching important social and business problems. It is used to investigate issues such as industry and product demand, trade and exchange rates, the money market and interest rates, industry performance and the role of government policy.

Marketing involves the application of marketing principles in order to maximise business performance. These principles are examined in the context of a variety of industry structures, goods and services. Marketing is an expanding area of employment and one which is likely to continue to grow in the future.

During the course students also undertake complementary studies in other relevant business-oriented disciplines such as accounting, law, computing and organisational behaviour.

Employment prospects are good in a wide range of interesting and challenging fields including:

- marketing and marketing research including advertising
- economic analysis and research
- economic policy evaluation and financial analysis
- administration in both public and private sectors
- management consulting

Teaching methods adopted in this course emphasise individual and group projects, case studies and the opportunity to work on relevant practical problems.

The choice available to students of two additional mandatory units chosen from either the marketing or economic electives available, gives them an opportunity to further specialise in the discipline of their career choice.

A053 Marketing stream

The Bachelor of Business (Marketing) is exciting and challenging. It provides a strong conceptual background for would-be entrants to the marketing profession.

Marketing students at Swinburne are trained to develop their mental and business skills. They are educated:

- to be creative in capitalising on opportunities
- to use modern technology to reach business decisions
- to be specific in dealing with solutions
- to deal with international markets
- to understand the special aspects of services marketing and high technology marketing

Marketers are expected to find new markets and serve existing markets more effectively. They have control over such key strategic issues as product development, pricing, distribution arrangements, advertising, promotion, public relations and sales.

The Marketing stream allows students to pursue specialist marketing skills. Or, the structure makes it possible for students to combine Marketing with other disciplines including internationally oriented units.

Marketing graduates will go into any one of a wide variety of positions.

These positions can be found in Product Management, Marketing Research, Sales, Brand Management, Services Marketing, Public Relations, Advertising and International Business, etc.

The scope of opportunities covers a wide variety of business activities as well as Government positions.

Graduates are eligible for membership of the Australian Marketing Research Society, the Marketing Association of Australia and New Zealand and the Australian Marketing Institute.

Double BBus/BA Degree — Japanese or Italian

The double degree Bachelor of Business/Bachelor of Arts is of four years duration and is designed to enable students to complete the compulsory requirements for any of the Business degree streams together with the full range of the available Japanese or Italian units in order to qualify for the award of two degrees.

Course requirements

The first year of the Bachelor of Business is compulsory for all degree streams. Students in the combined Business course must complete:

- Business Common Year (10 units)
- the mandaritary units in one of the Business degree streams (10 or 8 units as listed)
For a **BBus/BA (Japanese)**
- The following Japanese units
  - Japanese 1
  - Japanese 2
  - Japanese 3A
  - Japanese 3B
  - Introduction to Japan
  - Communication in Japan
  - Modern Japan
- One further elective unit chosen from either Arts or Business (for Accounting, Economics-Marketing, Marketing), three further electives for Computing.

For a **BBus/BA (Italian)**
- Italian 1
- Italian 2
- Italian 3A
- Italian 3B
- Common Market Politics
- Italian Culture 1
- Italian Culture 2
- Italian Business Practice

Students completing the computing stream must complete 2 additional electives.

**BBus/BA (Korean)**
A double degree Bachelor of Business/Bachelor of Arts Korean will also be offered in 1990 subject to accreditation.

**Degree course structure**
The degree course comprises twenty-six units. The first (or common) year comprises ten units. The second and third years of the course comprise mandatory units as shown below plus an additional number of elective units to reach the twenty-six total.

First year
In Common Year, full-time students are expected to study all ten units in the one year. This is a standard enrolment. Part-time students study two units per semester.

First year (common to all degree streams)
- BC101 Accounting 1A or BC105 Accounting 1B
- BC103 Accounting 1C
- BE101 Economics (+2 units)
- BH101 organisations and Management
- BL101 Legal Environment of Business
- BM101 The Marketing Concept
- BT101 Information Technology (+2 units)
- SM147 Quantitative Analysis A
- or SM148 Quantitative Analysis B

Students do not have to identify which of the major streams they intend to study until enrolling for the second-year units.

Second and third years.
In second and third years, full-time students are expected to study four units per semester. Part-time students are expected to study two units per semester. The choice of units is up to the students but the faculty issues an enrolment guide to highlight the best combinations.

Students also have the option of completing one year of cooperative education. See Cooperative Education in the Faculty of Business (page 145).

**Accounting**
- (10 mandatory, 8 electives)
  - Cost Accounting
  - Management Accounting

**Contract Law**
- Law of Business Organisations
- Taxation

**Quantitative Management Techniques**
- Accounting

**Taxation**
- Financial Management 1
- Accounting Theory
- Auditing

**Computing**
- (8 mandatory, 8 electives)
  - Information Analysis
  - Commercial Programming
  - Data Base Management Systems
  - Data Communications
  - Systems Development Strategies
  - Systems Software
  - Industrial Project (2 units)

**Economics-Marketing**
- (10 mandatory, 6 electives)
  - Managerial Economic Analysis
  - Industry and Government
  - Economic Techniques for Business

**Market Behaviour**

**Marketing Strategy**
- Product Management
- One third year Economics unit
- Two further units from either Economics and/or Marketing

**Accounting**
- (10 mandatory and 6 elective units)
  - Market Behaviour
  - Marketing Strategy

**Marketing Data Management**
- Accounting for Marketing 1
- Organisation Behaviour 1
- One third year Economics unit

**Product Management**
- Strategic Marketing Cases
- Marketing and the Law

One further third year Marketing unit

Elective units
Elective units may be taken from any of the Business units listed below.

Whilst not mandatory, it is highly recommended that students taking the Accounting stream study BH201 Organisational Behaviour 1 and a further computing unit amongst their elective units.

Students may also take their elective units from the Faculty of Arts with the following exceptions:
- no units with an AT Prefix
- not AP109 Society and Economics A
- not BS117 Macroeconomics
- not SM171 or SM172 Mathematics
- not units similar to those which have already been studied elsewhere and have been the basis for exemptions
- no more than two units from first year (e.g. AP 1**) will be credited towards the degree.

Students wishing to take electives in a language should also check the double degree Business/Arts (language) on page 143.

Students wishing to study units from a faculty other than Business or Arts must seek approval before enrolling.

**Disciplines and unit codes**
Not all the units will be offered each year, as the number of units timetabled each year is governed by the demand and the availability of suitable teaching staff.

**Disciplines**
- Accounting
- BH201 Accounting 1A
- BH202 Accounting 1B
- BH203 Accounting 1C
- BC101 Corporate Accounting
- BC102 Cost Accounting
- BC203 Management Accounting
- BC204 Accounting for Marketing 1
- BC205 Accounting for Marketing 2
- BC300 Accounting Theory
- BC304 Auditing
- BC305 Budgeting
- BC306 Taxation
- BC308 Advanced Taxation
- BC311 Financial Management 1
- BC312 Financial Management 2
- BC313 Financial Accounting
- BC314 EDP Auditing

Faculty of Business
Prerequisites
Students must have passed the listed prerequisites if it is shown without qualification e.g.,

\[ \text{BE202 Cost Accounting} \]
Prerequisite, \( \text{BC202 Accounting 1C} \)

Where a prerequisite is listed as follows:

\[ \text{BL304 Finance and Credit Law} \]
Prerequisite, students enrolled in this unit will be expected to have passed \( \text{BL201 Contract Law} \), this means that all students taking \( \text{BL304} \) must have studied \( \text{BL201} \) in order to understand the concepts involved. Some students who did not pass the prerequisite but achieved a reasonable level of understanding may be given permission to enrol for the higher-level unit.

Preclusions
\[ \text{BC202 Cost Accounting and BC203 Management Accounting} \]
and \( \text{BC204/205 Accounting for Marketing 1 and 2} \), are mutually exclusive and students are precluded from counting both in a course. Only students completing an Economics-Marketing Marketing major may enrol for \( \text{BC204} \) and \( \text{BC205} \).

Students may not count both \( \text{BE205 Economic Techniques for Business} \) and \( \text{BQ204 Marketing Data Analysis} \) towards their degree requirements.

Maximum units available from one discipline

Each discipline is identified by a code prefix. The faculty has a rule that no more than 11 units may be studied from the one discipline. This includes all the mandatory and elective units with the same prefix.

Students planning to study several electives from the same discipline should check with the Assistant Registrar.
COOPERATIVE EDUCATION IN THE FACULTY OF BUSINESS

Manager: J.R.W. Gerrand, BEc, ASSA, CPA
Administrative Officers: J. Newman, DipBus(Sec), M. Stephens

Cooperative education (coop) offers students an opportunity to combine study with practical on-the-job experience. Under the program students spend the third year 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 coop year students resume their studies at the Institute. To complete the Bachelor of Business, including coop, takes a minimum of four years.

The program:
Students are invited during the second year of full-time study to apply for entry into the program. Successful students, who are selected on the basis of academic performance and attitude, are then assisted by the Faculty to find employment. Assistance is given in the form of information sessions with employers, lectures on interview techniques and skills, and general support in making sure that each participating student is placed.

Coop students are assigned a member of the academic staff to act as their mentor and to liaise between the employer and the Faculty.

Students are required to successfully complete a detailed report on their work experience year. Whilst working, students are permitted to study one unit per semester.

Benefits of the program to the students:
The coop year is a wonderful opportunity to combine theory and practice.
- Coop gives students one year of practical experience, enabling them to learn about the working environment, to understand employers’ expectations, ethics and relationships with colleagues.
- Coop gives students a head start to a successful future. As they have already held a job, career decisions are made easier and coop students have more to offer to prospective employers.
- There is a potential for coop students to have a job waiting on graduation. Alternatively, part-time employment during final year of study may become available with the coop employer.
- Students have financial freedom through the opportunity to earn and save money.
- Coop enables students to use work experience to choose final year subjects.

Coop employers:
The following companies are associated with employing business students:
- ANZ Bank
- Amcor Ltd
- Arthur Andersen
- Arthur Young
- Assco (Vic) Pty Ltd
- Attorney General's Department
- Australian National Line
- BHP Limited
- BP Pty Limited
- Bowater Ltd
- Bunge (Aust) Pty Ltd

TERRACALLS PTY LTD

We are a firm of Chartered Accountants which commenced trading 1st January, 1987 from 284 Canterbury Road, Surrey Hills where we still reside. Since then our fee base has more than doubled and staff increased from seven to fourteen.

At Terracalls our firm philosophy is "Professional Service". Whilst the major aim of any business is to make money for its shareholders we believe this is best achieved by providing the best unqualified service to our clients. We are also not naive enough to claim that this standard is achieved 100% of the time, however, that is the standard we strive for.

We have recently acquired a Networked Computer system utilising Epson hardware and Solution 6 software.

The perception of the Accountant being staid, unimaginative, dull and boring no longer applies. We are strongly of the view that the business community needs timely and accurate financial information upon which to base their decisions. This is the future we participate in together with our clients.

Over the next twelve to eighteen months we plan to grow the practice to the stage where it employs more than twenty people.

We have been a participant in the Swinburne Co-operative Programme since its inception. Terracalls strongly supports the programme and look forward to its continued success.

Director: Robert Terracall, Chartered Accountant
284-286 Canterbury Road, Surrey Hills, Victoria 3127  Telephone (03) 836 0655  Facsimile (03) 836 1390
All correspondence to: P.O. Box 199, Canterbury 3126
Professional Institutes
To be eligible for membership of the various professional institutes, students must complete the following requirements:

**Australian Computer Society**
Computing stream graduates are eligible for membership of this society. Other graduates may qualify for membership by choosing appropriate computing electives.

**Australian Society of Accountants**
Accounting stream
Provisional membership — the completion of the degree requirements satisfy the educational requirements for Provisional Membership. Advancement to higher levels (Associate, CPA, etc.) is dependent upon completion of further study and as specified by the ASA.

**Institute of Chartered Accountants**
Accounting stream
To be eligible for entry to the professional year of the Institute of Chartered Accountants, graduates must have completed all the mandatory Accounting stream units.

Computing stream
As for Provisional membership of the Australian Society of Accountants above.

**Management Accounting**
Mandatory units plus
Corporate Accounting
Cost Accounting
Management Accounting
Contract Law
Law of Business Organisations
Financial Management
Accounting Theory
Auditing
Taxation

**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.

**Exemptions**
Exemptions may be granted for tertiary subjects studied at another institution; the maximum number of exemptions allowed is twelve units.

Applications should be made at the time of enrolment on a form available from the Student Administration Office accompanied by a photocopy of results achieved in any previous tertiary studies. Students must complete the Application for Exemptions Form and lodge it with the Assistant Registrar (Business).

**Textbooks**
Unless otherwise specified students are advised not to purchase textbooks or references until classes commence. Books to be purchased are indicated by an asterisk * and further information will be given during the first lecture or class.

**Standards of progress**
All students, both full- and part-time, are expected to maintain a minimum academic standard in order to be allowed to continue their studies.

The following criteria are those usually applied and unless otherwise specified, these refer to students enrolled in all business courses:

1. **Full-time students**
   (a) Common year (normally 10 units of study)
      (i) Students passing the equivalent of 7, 8 or 9 units may continue with their remaining common year units and some second year units on a full-time basis.
      (ii) Students passing the equivalent of 5 or 6 units may only enrol in the following calendar year for part-time mode and students not satisfying the criteria will be excluded unless they can show cause why they should not be excluded from the faculty (see 4).
   (b) Second and third year (normally 8 units of study per year)
      (i) Students in later years must pass 4 units per year to be allowed to continue on a full-time basis.
      (ii) Progress will be reviewed at the end of each year and students not satisfying the criteria will be required to show cause why they should not be excluded, or sent part-time as appropriate.

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Exemptions may be granted for tertiary subjects studied at another institution; the maximum number of exemptions allowed is twelve units.

Applications should be made at the time of enrolment on a form available from the Student Administration Office accompanied by a photocopy of results achieved in any previous tertiary studies. Students must complete the Application for Exemptions Form and lodge it with the Assistant Registrar (Business).

**Notice-boards**
Information for the benefit of all students is displayed on the notice-board on level 2 of the Business and Arts (BA) Building and it is advisable to check these from time to time. Other assistance is available at the General Office of the Faculty of Business on level 9 of the BA Building.

**Textbooks**
Unless otherwise specified students are advised not to purchase textbooks or references until classes commence. Books to be purchased are indicated by an asterisk * and further information will be given during the first lecture or class.

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   (b) Second and third year (normally 8 units of study per year)
      (i) Students in later years must pass 4 units per year to be allowed to continue on a full-time basis.
      (ii) Progress will be reviewed at the end of each year and students not satisfying the criteria will be required to show cause why they should not be excluded, or sent part-time as appropriate.
2 Part-time students
Students who do not pass 2 units for the year will be required to show cause why they should not be excluded from the faculty (see 4).

3 Completion of common year
Full- and part-time students may not enrol for second or third year units unless they have completed and are concurrently completing all outstanding common year units. When a student is enrolled for both common year units and second year units, the common year units must not be dropped whilst retaining the later year units.

4 Requirement to show cause
Students who, under the set standards may be required to change to part-time or show cause why they should not be excluded from the faculty, may present a case (in writing) to the Student Review Committee setting out the relevant factors which have affected their performance in the previous year and why the Standards of Progress should not be applied in their case. In order to help students, the letter advising non-compliance with Standards of Progress will illustrate some of the guidelines used by the Student Review Committee.

5 Student Review Committee
(a) Composition
(i) The Chair plus 2 members of the academic staff nominated by Faculty Board.
(ii) A student representative selected by the Chair from the panel of student members on Faculty Board, provided that, if the student being reviewed so wishes, no student representative shall sit on the Review Committee for that interview.

(b) Procedure
(i) Students will be required to submit in writing full details of their reasons for poor performance.
(ii) In addition, the Assistant Registrar will seek information from relevant academic staff on the work of students who have appealed.
(iii) A decision will be made on the information provided by the student and relevant academic staff. The Student Review Committee may consider it appropriate to hold an interview with a student who has appealed.
(iv) No student will be excluded from the faculty or required to study part-time without first having the opportunity to present a case in person to the Student Review Committee.

6 Conditions of enrolment
(a) Full-time
Usually full-time students will remain enrolled for 4 units per semester.
(b) Part-time
Usually part-time students will remain enrolled for two units per semester.

Over-enrolments
Students may not enrol for more than 4 (full-time) or 2 (part-timers) units per semester without permission from the Assistant Registrar.

Withdrawing from units
Students are required to withdraw from a unit by a date specified for each semester (nine weeks prior to the commencement of the examination periods — for 1990, 31st March and 31st August), otherwise the result in that unit will be shown as a fail. Provided a student withdraws in the correct manner and in due time from a unit, the unit withdrawn will not be counted as a fail or used in the assessment of progress. However, attention is drawn to 6(a) and (b), outlining the faculty expectations as to a standard enrolment per semester.

Transfer between part-time and full-time study
Subject to the fulfilment of any conditions set by the Student Review Committee, a student can transfer between full- and part-time study at normal re-enrolment times without special request.

Admission to examinations
Enrolment and satisfactory completion of prescribed assignment work, are normal prerequisites for admission to any final examination.

Withdrawal from study
A student who wishes to withdraw from study or to change a unit at any time during the year, should discuss this first with the Assistant Registrar (Business) or Administrative Officer. All withdrawals must be notified on an Amendment to Enrolment form.

Requests to complete subjects away from Swinburne
There should be lodged with the Assistant Registrar (Business) before enrolling in those units at another institution.

Faculty of Business Scholarships
The Faculty has been fortunate in obtaining a large number of scholarships and prizes for its students, mostly provided by industry. These are to encourage and reward the academic excellence that the Faculty at all times encourages.

The 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
This scholarship will be awarded on the basis of need and academic performance to a full-time second or third year student in the Faculty of Business. Applications close in April.

The Bourne Griffiths/Swinburne Entrepreneurial Accountant Scholarship
Awarded on interview to a student entering final year accounting.

The Aspect Computing Scholarship
Awarded on interview to a second year computing student.
The simple answer is that Peat Marwick Hungerfords' graduates may choose just about any career path they wish.

Peat Marwick Hungerfords is one of Australia's biggest accounting firms. So we can offer graduates a vast array of career opportunities.

From taxation to takeovers, management consultancy to reconstructions, from audit to small business management.

And graduates have the opportunity to pursue that career in one of our many offices around the world.

But being one of the biggest doesn't mean being impersonal. This is a people business, and to us the most important people are our clients and our staff.

Because it's your success that guarantees our success.

Right now the future is yours for the taking. If you'd like any more information, feel free to call our Recruitment Manager, Ms Pat Conquest on (03) 640 5555.

KPMG Peat Marwick Hungerfords
Faculty of Business Prizes

Annual awards are made by the following donors:

The Arthur Andersen and Co. Prize
The best student with the best aggregate performance in Financial Management 1 and Accounting Theory.

The Bill Hibble, Arthur Andersen and Co. Prize
The best performance in a Computing programming unit.

The Australian Computer Society Prize
The best student in final year computing practical work.

The Australian Institute of Management Medal
The best overall student completing the Economics/Marketing degree stream.

The Australian Institute of Management Business Administration Prize
The best candidate completing the Graduate Diploma Business Administration selected for entry without a first degree or diploma.

The Australian Society of Accountants Prizes
The best students in first, second, and third year accounting units.

The Australian Society of Corporate Treasurers' Prize
The best overall student completing the Graduate Diploma in Corporate Finance.

The BP Australian Prize
The best student in Corporate Accounting.

The William Buck and Co. Prize
The best student in the unit Business Computing.

The Butterworths Books Prizes
The top student in the unit Organisations and Management, The Marketing Concept, Legal Environment of Business, Economics, Information Technology and Quantitative Analysis.

The CRA Prizes
Awarded to the three third year students who achieved the highest aggregate results in the five mandatory accounting units in first and second years.

The Chandler and Macleod Consultants Prize
The best performance in Administration of Human Resources.

The Coopers and Lybrand Prize
The best student in Cost Accounting and Management Accounting.

The DMR Prizes
The best two students in second year Systems Design.

The Deloitte, Haskins and Sells Prize
The best student in EDP Auditing.

The Economic Society of Australia Prize
The best student with a major study in economics.

The Peat Marwick Hungerfords Prize
The best student in Financial Management 2.

The ICI Prize
The best final year computing student.

The Integrity Prize
The top student in Accounting 1A/B.

The Westpac Prize
The best final year student in the Economics/Marketing degree.

The Logica Prize
The best performance in Quantitative Management Techniques.

The Mobil Oil Aust Ltd Prize
The best written presentation in Marketing Management 2.

The Mobil Oil Aust Ltd Prize
The best overall student completing the Graduate Diploma in Organisation Behaviour.

The National Australia Bank Prize
The top student in BE302 Economic Research.

The National Mutual Prize
The best student in the subject The Organisation.

The Price Waterhouse Prize
The best student in Financial Accounting.

The Road Construction Authority Prize
The best student in Management and Leadership in Organisations.

The Siemens Ltd Prize
The best student in Contract Law.

Swinburne Graduate Society of Business Administration Prize
Best overall student in the Graduate Diploma in Business Administration.

The Touche Ross and Co. Auditing Prize
The best performance in degree Auditing.

The Touche Ross and Co. Taxation Prize
The student with the best aggregate result in Taxation and Advanced Taxation.

The Touche Ross and Co. Business/Japanese Prize
The best second year student in the Business Japanese double degree.

The following prize is presented by Swinburne Institute of Technology:

The TW. Higgins Prize
The best graduating student in the degree of Bachelor of Business.

1050 Bachelor of Information Technology

This course is offered in conjunction with the Faculty of Applied Science.

The course equips graduates to meet the shortage of professionals in the application of information technology within business and industry and with an appropriate grounding in management education to prepare them for future roles in management.

The course is offered as part of a Commonwealth pilot scheme and is conducted as a full-time course of three years' duration. Students are actively engaged in the course for an average of 44 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 of $8000 per annum to each student admitted to the course.

Segment 1

IT101 Computer Fundamentals
IT102 Introduction to Programming
IT103 Business Applications and Systems 1
IT104 Management and Communications
Non-computing Elective

Segment 2

IT201 Decision Analysis
IT202 COBOL programming
IT203 Business Applications and Systems 2
IT204 Accounting 1
Non-computing Elective
We are an international firm of Chartered Accountants with over 33,000 partners and staff in 89 countries. Each year we recruit graduates with majors in Accounting, Accounting/Computer Science and Accounting/Law to join our team of leading professionals. Working with Touche Ross involves:

- working with a range of clients from most areas of commerce and industry
- opportunities to travel overseas on short term and extended assignments
- being encouraged to realise your potential through on-going staff training and increasing responsibility.

For further information please contact:

Personnel Manager
Touche Ross
Level 31, Rialto
525 Collins Street, Melbourne
Telephone: (03) 618 0529

Our Graduate Recruitment specialists have researched and developed a program specifically designed for your career success. That success relies on our expertise in

- Preparation and presentation
- Assessing job opportunities
- Career assessment.

We encourage you to call for further information.

Telephone 650 2772.
251–257 Collins St, Melbourne 3000
Facsimile 650 9812.
Segment 3 (Summer Term)
IT301 Systems Software 1
IT302 Organisation Behaviour
IT303 Data Management Systems 1

Segment 4
IT401 Industry Based Learning

Segments 5 and 6
10 units must be studied in these two consecutive segments. They can be taken in any order that prerequisites allow, and must include 4 core units, 4 chosen from the speciality units on offer and 2 non-competing electives.

Core units
IT501 Systems and Information Analysis 1
IT503 Data Base Management Systems 2
IT504 Data Communications 1
IT509 Software Engineering 1

Specialist units
At least two of these must be taken from the subjects marked with an asterisk.
IT502 Systems Software 2
IT505 Knowledge Engineering
IT506 Expert Systems*
IT507 Computer Graphics and Imaging 1
IT508 Systems Performance
IT511 Digital Electronics and Devices
IT601 Systems and Information Analysis 2
IT602 Systems Software 3*
IT603 Data Base Management Systems 3*
IT604 Data Communications 2*
IT605 Artificial Intelligence*
IT607 Computer Graphics and Imaging 2*
IT609 Software Engineering 2*

Segment 7
IT701 Industry Based Learning

Segment 8 (Summer Term)
IT801 Project
IT802 Seminars and Project Management and Control

*All subjects may not be offered each semester.
For detailed syllabus information see Faculty of Applied Science.

Graduate Diploma courses
A080 Graduate Diploma in Accounting

The Graduate Diploma in Accounting is offered by Swinburne Institute of Technology in conjunction with the Institute of Chartered Accountants in Australia. The course is designed to provide candidates with an opportunity to pursue an advanced course of study which incorporates the Professional Year technical module requirements of the Institute of Chartered Accountants.

Course objectives
This course offers candidates:
(1) an opportunity to study for professional year technical modules in a structured learning environment;
(2) the chance to enhance their professional skills in both the technical areas of accounting practice and related fields which have assumed a position of greater importance in recent years.

Entrance requirements
(1) Applicants must have an approved tertiary qualification in business, commerce or economics including a major study in accounting.
(2) Applicants must have at least one year's relevant work experience and be in full-time employment with a chartered accountant or firm of chartered accountants in public practice and be enrolled for the ICAA Professional Year.

Proposed 1990 course structure
The course is in the process of being revised. It is envisaged that the course will consist of seven mandatory units as follows:
BC601 Auditing and EDP*
BC554 Auditing and EDP2*
BC602 Current Issues in Accounting
BC556 Accounting
BC602 Tax Planning
BC505 Investment Analysis
BC651 'Taxation''

* These three units are the Swinburne equivalent of the Institute of Chartered Accountants' Professional Year technical modules of Accountancy, Taxation and Audit and EDP.

Each of the seven proposed units will comprise thirteen three hour evening sessions.

Exemptions
Students will be granted exemptions for a maximum of two Professional Year units previously passed.

Methods of study and assessment
With respect to the units equivalent to the Professional Year modules, candidates will complete the same module case studies, research projects, in-class work and module examinations as required by the Institute of Chartered Accountants. In addition to these requirements, further sessions will be held to develop conceptual and practical skills with the aim of enhancing candidates' prospects of success in their Professional Year examinations.

With respect to other units, a variety of methods of instruction is employed, ranging from structured seminars, hands-on computing work and syndicate presentations. Assessment varies accordingly.

Standards of progress
In order to continue in the course, candidates must maintain a satisfactory standard of progress. A sub-committee shall review results with the object of determining whether a satisfactory standard of progress has been attained and whether the candidate should be allowed to continue in the course.

Institute of Chartered Accountants in Australia
Upon the completion of the units run in conjunction with the Institute of Chartered Accountants candidates will have satisfied the technical module requirements of the Institute's Professional Year.
A083  Graduate Diploma in Business Administration

This program is offered for qualified executives or potential executives, who have not undertaken significant studies in the administration/management fields, but in the course of their employment, feel the need for a broader knowledge of this area.

The program gives candidates:
(1) a working knowledge of the factors affecting the task of the manager and methods of analysing these factors. Particular emphasis is on the needs of middle-management in both private and public enterprise, to manage in a changing environment;
(2) an opportunity to examine and practise problem-solving and decision-making in management situations, which should equip students in any type of business organisation with the ability to develop logical and creative approaches to their jobs.

After completion of the program, candidates will have improved their analytical skills and their effectiveness in dealing with managerial responsibilities. Moreover, participants will have a broader outlook, extending beyond their immediate specialist area.

Entrance requirements
Entrance is open to graduates who hold a degree or diploma or its equivalent. The program is available also to a restricted number of candidates whose position or experience in employment is sufficient indication of their capacity to complete the course.

Admission is determined by a selection committee. In addition to academic achievements selection depends upon maturity, work experience and executive potential. Accordingly, each applicant is invited to attach to the application form a detailed curriculum vitae.

It is expected that most people who gain direct entry to the course should complete the qualification with two years of part-time study, but, in order to continue in the course, students must maintain a satisfactory standard of progress.

Course structure
First year
BC503 Introduction to Financial Management
BE501 Economics
BM501 Administration of Organisational Systems
BM504/5 Quantitative Methods
Second year
BC604 Financial Structures and Policy
BM605 Managing Human Processes
BM601 Marketing Management 2
BM603 Business Policy

The program is an intensive two-year part-time course. Candidates should complete at least four first-year units and in some cases (depending on background studies) may be required to complete five. All second-year units are compulsory. In the first year, candidates are introduced to current thought in the area of marketing, economics, finance and organisation theory. Second year covers the important areas of marketing strategy, financial management, human relations and organisational change. These aspects are viewed in the overall light of corporate strategy (business policy). Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.

Because of the integrated nature of the course, students are required to complete all first-year studies before attempting second year.

Preclusions
Depending on previous training, candidates may be precluded from some of the first year units and assigned alternative units in their place.

Alternative units
Candidates who are precluded from more than one first-year unit must choose, in consultation with the course convener, an alternative post graduate unit.

Standards of progress
A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Methods of study and instruction
More than one method of instruction is used, so active participation is essential. Participants work in groups or syndicates to encourage co-operative 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. Seminars are scheduled for one evening (normally Wednesday) between 6.00 and 9.00.

A088  Graduate Diploma in Market Forecasting

Course objectives
The Graduate Diploma in Market Forecasting is designed for those people who wish to obtain the skills and techniques necessary in order to:
- be aware of when and where the need for forecasting exists and where it fits in with respect to the planning process;
- evaluate dominant market and environmental factors affecting an organisation;
- prepare short, medium and long-term forecasts where appropriate;
- effectively communicate the results of the forecasting process and oversee their implementation.

Entrance requirements
Applicants must have at least two years relevant work experience. Applicants must have at least two years relevant work experience subsequent to initially graduating.

There are limited number of places available for candidates without tertiary qualifications, however, these candidates are expected to have substantial relevant work experience.

Course structure
The emphasis throughout the course is on the practical aspects of forecasting. The use of computers is a feature in almost every unit, and throughout the course participants will be introduced to a wide variety of specialist computer packages to facilitate solution of forecasting and related problems.

First year
Semester 1
BE504 The Nature and Characteristics of Markets
BC502 Database Sources and Methods
Semester 2
BM502 Selecting and Influencing Markets
BC503 Business Forecasting 1
Semester
Second year
Semester 1
BQ602 Business Forecasting 2
BM604 Data Collection Methods and Applications

Semester 2
BQ603 Business Forecasting 3
BC602 Forecasting and the Planning Process

The course is designed for part-time study predominantly in the evening.

Preclusions
Candidates may be precluded from attempting a unit in the event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

Standards of progress
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.

A087 Graduate Diploma in Business Information Technology

Course objectives
This course is designed as an entry level course for graduates in any discipline who wish to utilize computing skills in their existing profession or who may be contemplating a change in career direction. No prior knowledge of computing will be assumed.

The course aims to assist students whose career aspirations are dependent on obtaining specific skills and knowledge of computing as applied to business.

Specifically the course is aimed at giving students:
- Practical skills in:
  (i) common business software packages
  (ii) application programming
  (iii) structured analysis
  (iv) data base management systems
  (v) data communication
  (vi) expert system tools
- Knowledge about techniques for:
  (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) applying knowledge based systems to various business problems.

Employment opportunities
The type of work that graduates may be involved in includes:
- liaising between user areas and the computer department
- analysing and designing information systems
- programming
- evaluating software and hardware
- co-ordinating 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 consists of eight (8) semester units. Taken on a part-time basis, the course will consist of two (2) units per semester for four semesters. Taken on a full-time basis, the course will consist of four (4) units per semester for two semesters.

The units are:
- BT504 Introduction to Information Technology
- BT505 Software for End Users
- BT506 Information Analysis
- BT507 Computer Programming
- BT606 Data Base Management Strategies
- BT607 Data Communication and Office Automation
- BT608 Systems Development Strategies
- BT609 Knowledge Based Systems

Each unit is conducted for four hours per week. In many units part of this time will be taken up in computer laboratories. Students will have access to laboratories outside normal class times.

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
This course is intended for graduates and diplomates who have sufficient professional experience to benefit from it. Entrance is also available to a restricted number of mature-age non-graduates or diplomates whose position or experience is sufficient indication of their capacity to complete the course.

Course structure
The course is organised into an eight-unit structure to be completed over two years of part-time study at the rate of two units per semester. In order to continue in the program, candidates must maintain a satisfactory standard of progress.

Consistent with the course objectives of a broad coverage and the integration of related disciplines, there are no elective units offered.

First year
Semester 1
BC604 Corporate Financial Management 1
BE503 Financial Institutions and Markets
Semester 2
BC506 Corporate Financial Management 2
BL502 Legal Aspects of Finance

Second year
Semester 1
BC605 Investment Management
BE903 International Finance and Monetary Theory
Semester 2
BQ601 Financial Modelling
and other
BC606 Current Developments in Corporate Finance
or
BC607 Research Project
Preclusions
Candidates may be precluded from attempting a unit in the unlikely event that they have recently passed and equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

Standards of progress
The following should be read in conjunction with paragraphs 4 and 5 of the undergraduate 'Standards of Progress' as a provision applying to Graduate Diploma in Corporate Finance students:

At least one unit must be passed each semester until all course work is completed, unless a deferment of study is sought and approved.

A084 Graduate Diploma in Management Systems
The Graduate Diploma in Management Systems involves two years' part-time study. Classes are conducted in the evening.

General objectives
This course is offered to people working in a data processing environment who wish to pursue an advanced course of study and improve their career opportunities.

After completing this course, candidates should be able to:
(1) develop their understanding of the application of management systems methodology to the problems of commerce, industry and government;
(2) evaluate the changes and advances in the field of computing technology and use sound reasoning to determine the applicability of these developments;
(3) fully appreciate the effects of various proposed solutions.

Course structure
The course is in two parts, mandatory units and elective units. The compulsory part of the course is concentrated on the 'systems and management' side of data processing. The range of the investigation, analysis, design and development of management systems will form a major part of the course. Project and operation management is covered in depth to ensure that students have a thorough understanding of how systems can be developed and operated efficiently. The course stresses commercial applications with particular emphasis on the involvement of the eventual users of these systems in the process of their development.

The program is made up of eight units and candidates are required to take these from two groups as follows:

Group 1

The following units are compulsory:
- BT503 Software Engineering Strategies (2 units)
- BT502 Current Issues in Systems Design
- BT601 Systems Project Management
- BT602 Information Systems Management
- BT603 Management Systems

Group 2

Students must take an approved pair of units from this section:
- BH504 Management, Organisation and People
- BM602 Strategic Management
- BS503 Introduction to Financial Management
- BC604 Financial Structures and Policy

The Graduate Diploma in Management Systems forms the first two years of the Master of Business (Info. Tech.). Candidates wishing to proceed to the Master of Business (Info. Tech.) should choose the elective pair:
- BH604 Management Organisation and People
- BM602 Strategic Management

Preclusions
It is not normal policy to grant preclusions, however, if students have appropriate prior training, they may be allowed to choose other approved units including BT605 Systems Development Project (2 units).

Extension seminars
In addition to normal class contact each student is required to attend up to six three-hour seminars each year of the course. The aim of the seminar program is to present the latest developments and trends in the data processing industry or present specialised topics of particular interest to the computer industry.

Suitable applicants
The intake into this course is usually:
(1) computing professionals progressing past the programmer level into systems analysis and project management;
(2) systems analysis, consultants and some user department representatives who have had considerable experience in the development of management systems.

Entrance requirements
Entry is open to graduates who have a degree, diploma or equivalent from a recognised university or other institution. Graduates from any discipline may apply, but applicants are expected to have work experience in a data processing environment. The course is available also to a number of carefully selected candidates without tertiary qualifications or who have substantial computer experience. These comprise only a small percentage of total enrolments.

An information seminar is conducted for short listed candidates prior to entrance to the course. Interviews may be required.

A085 Graduate Diploma in Organisation Behaviour
This course is for managers who wish to extend their knowledge of human behaviour within organisations. Most students in this course aspire to, or occupy middle and senior management positions in large or small organisations.

The object of the course is to give candidates:
(1) a knowledge of the human factors that affect the task of management, together with a study of available methods for an analysis of these factors;
(2) an opportunity to examine and to practise problem-solving and decision-making when handling people in the organisational context;
(3) a broadened outlook beyond their immediate area of specialisation.

Course structure
The program is an intensive two-year, part-time course. The units (all of which are compulsory) are listed below. The first year introduces candidates to the areas of psychology and interpersonal skills, together with a study of organisation theory.

The second year deals with the management of conflict and change, and leadership. These aspects are examined and applied in the overall pattern of organisational strategy. Because of the integrated nature of the course, students are required to complete all their first year studies before attempting second year.

First year
- AB501 Psychology and Interpersonal Skills
- BH502 The Organisation

Both these units run for the whole academic year and have a total class time commitment of 5 hours per week.
Second year
BH602 Managing Conflict and Change in Organisations
BH603 Management and Leadership in Organisations

Each unit runs for 4 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 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, but it is expected that most candidates will complete the course within two years of part-time study.

Methods of learning
A wide variety of teaching methods is employed ranging from structured lectures or discussion to unstructured experiential type activities. Skills relating to work in groups are stressed and these should be developed by active participation in syndicates.

Professional institutes
Graduates of this course are eligible to apply to the Institute of Personnel Management, Australia, for membership of this professional society.

Timetable
Sessions for both first year and second year units are organised on a block system. Both first year units are offered on Wednesday morning 8.00am to 1.00pm and second year sessions on Friday 8.00am to 12.30pm. Special or syndicate sessions may be scheduled where appropriate. A residential or seminar program in addition to the usual 5 hours per week is scheduled each year as an integral part of the course. A considerable out-of-class time commitment is a necessary element in this learning experience.

Lecturers
The teaching program is conducted by staff from the faculties of both Business and Arts.

A090 Research Degrees
(1) The Faculty provides opportunities for studies leading to the Master of Business by research and major thesis and to Doctor of Philosophy by research and major thesis. Candidates interested in these major research degrees should contact the Dean of the Faculty.
(2) Applicants must allow 2-3 months for a successful application to be evaluated.
(3) Applicants wishing to apply for a postgraduate award must therefore submit their application to the Institute by 31 October in order to have the candidature finalised by the closing date for these awards.

Faculty of Business

Masters Degrees by Course Work and Minor Thesis

A091 Master of Business
(Organisation Behaviour)
This is a four year part-time degree by course work and minor thesis. The first two years are the same as for the Graduate Diploma in Organisational Behaviour; year three comprises a further four units of course work 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 Organisational 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 criterion. Accordingly, each applicant is asked to attach to the application a curriculum vitae and a personal statement.

Course structure

Year One and Two
Graduate Diploma Units

Year Three
BH701 Career and Life Planning
BH702 Power and Politics in Organisations
BH703 Research in Organisational Behaviour
BH704 Current Issues in Organisational Behaviour

Year Four
BH801 Organisation Research Project
Minor Thesis (under supervision)

A092 Master of Business
(Information Technology)
The Master of Business (Information Technology) involves four years part-time study.

Course objective
The aim of this course is to provide a formal, structured program, covering the major areas of the broad field known as Information Technology as applied to business, but with the flexibility to allow cross-disciplinary studies within the Swinburne course, i.e. Master of Applied Science (Info. Tech.) and Master of Engineering (Info. Tech.) and, where appropriate, special electives to be undertaken at other associated institutions.

This course is intended for career students who aspire to management level positions or in management consulting with software houses or management service organisations. During the course, students will develop:
- the high level capacity and independent analytical skills necessary to assess the impact of Information Technology on an organisation, the people in it and its implications for commerce, industry and government;
- the capacity to understand the information technology needs of an organisation, and the ability to manage its selection, introduction and operation within the organisation;
- an understanding of the technology of information processing and its application in technical or management tasks.

In general, graduates will have enhanced skills in developing and applying advanced Information Technology systems in a wide range of industrial, commercial and public sector applications.

A090 Research Degrees

(1) The Faculty provides opportunities for studies leading to the Master of Business by research and major thesis and to Doctor of Philosophy by research and major thesis. Candidates interested in these major research degrees should contact the Dean of the Faculty.
(2) Applicants must allow 2-3 months for a successful application to be evaluated.
(3) Applicants wishing to apply for a postgraduate award must therefore submit their application to the Institute by 31 October in order to have the candidature finalised by the closing date for these awards.
Course structure

The Graduate Diploma in Management Systems forms the first two years of the Master of Business (Info. Tech.). Candidates in that course wishing to proceed to the Master of Business (Info. Tech.) should choose the elective pair:
BH604 Management Organisation and People
BM602 Strategic Management

First Year and Second Years

Graduate Diploma in Management Systems Units.

Third Year (Masters Course)

Semester 1
BC701 Business Forecasting
BT702 Knowledge Based Systems

Semester 2
BC702 Computer Aided Management
BH705 Management of Strategic Change

Fourth Year

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 co-operating institutions in Melbourne for approved equivalent course content.

Business subject details

BC101 Accounting 1A

Prerequisite, nil

A basic introduction to accounting concepts, the processing of accounting data and the preparation of financial reports.

The unit is divided into two segments. The first segment covers the accounting function, basic terminology, the accounting equation and the preparation of a balance sheet and management control and decision making, and for the preparation of final reports. The control of cash, bank reconciliations and balance day adjustments are included. The second segment revises the system using a commercial accounting package for micro computers. Three modules are used, General Ledger, Cashbook and Accounts Receivable. Each is looked at on a stand-alone basis and then they are integrated to provide an overall accounting system.

Textbooks
Shanahan, J.B., Guide To Accounting Standards. Revised edn, Sydney: Shanahan, 1988

BC102 Accounting 1B

Prerequisite, a result of 'C' or better in Year 12 Accounting or equivalent experience

The object is to provide a supplementary unit in accounting methods and techniques for students with some prior knowledge of Bookkeeping or accounting. The course content is as for BC101 — see above.

Textbooks and References
As for BC101.

BC103 Accounting 1C

Prerequisite, BC101 Accounting 1A or BC102 Accounting 1B

Accounting theory and practice are examined in an historical cost accounting system. This unit includes the following topics: revenue and expenses; accounts receivable; cost of sales and inventory valuation; assets and depreciation; liabilities and leases; accounting for shareholders equity; performance evaluation; analysis of financial statements and cash flow statements.

Textbook

References

BE101 Economics 1

The main objective of this subject is to teach students how economists analyse economic problems within the framework of the Australian environment. The course focuses on the role of the economy in allocating resources and distributing output. It then examines the firm's production, costs and revenues in a variety of market situations. This is followed by a detailed analysis of the determinants of the level and rate of change of national output, employment, prices and the rate of exchange. Attention is then focused on the role of fiscal, monetary, incomes, balance of payments and exchange rate policies in achieving economic stabilisation.

References

BH101 Organisations and Management

Prerequisites, nil

The objectives of this unit are:
— to enable students to gain an understanding of the nature of organisations and the role of management including open systems theory and the management roles of planning, decision-making, organising, leading staffing and controlling;
— to develop students' abilities to apply organisation theory to organisation situations;
— to help students better appreciate the context of work and their own roles as organisational members.

In addition to the theoretical material covered in lectures, tutorial exercises are designed to enable students to apply concepts either to situations within their own experience or to relevant business situations. The importance of people in organisations is stressed in these exercises.

Textbook

References
BL101 Legal Environment of Business
This unit introduces students to our legal system. The general objectives are:
- to introduce students to basic legal concepts;
- to develop an understanding of the nature and function of law, in particular the interrelationship of law, business, and society;
- to introduce students to important areas of business law including company, contract, tort and administrative law.

After an introductory session on the role of law within the Australian legal system, the unit is divided into two major themes. Three case studies on the role of law in promoting business activity are undertaken. These are drawn from contract, company, and property law. Case studies on the role of law in controlling business activity are undertaken. These are drawn from tort law and regulatory legislation.

Textbooks

BM101 The Marketing Concept
Prerequisites: Nil
This unit explores basic business and marketing concepts from a variety of perspectives. The objective is to understand the key concepts of business-customer exchanges and the theory of the market function.

Unit objective
The unit provides common year students with a series of lectures, discussions, and case studies to develop an understanding of business-customer exchanges and the theory of the market function.

Teaching methods
Thirteen two-hour tutorials and twenty-six one-hour lectures are offered, i.e. 1 x 2-hour tutorial per week and 2 x 1-hour lectures for one semester.

Textbook

References

SM147 Quantitative Analysis A
SM148 Quantitative Analysis B
First-year subjects in the Faculty of Business common year. For students without the appropriate Year 12 mathematics, the course, SM147 Quantitative Analysis A, is taken and it consists of four hours per week for two semesters. For students with the appropriate Year 12 mathematics or its equivalent, the course, SM148 Quantitative Analysis B, is taken and it consists of four hours per week for one semester. The content of both courses is the same, but the time allocation is different.

The primary purpose of this subject is to bring all students up to a high level of mathematical and statistical understanding of the quantitative procedures applied in various disciplines of their business course.

The course will cover:
- Computers and Applications: Spreadsheets using LOTUS 1-2-3;
- Database using dBASE III PLUS;
- Programming with dBASE;
- Large Systems and Communications;
- Systems Development.

The course is designed to be a blend of theory and practice. Students will write programs, build simple applications on the computer, and use computer software to solve business problems.

Textbook
To be advised.

References
Most introductory books on computers in business.

BC201 Corporate Accounting
Prerequisites, BC103 Accounting 1C

SM147 Quantitative Analysis A
SM148 Quantitative Analysis B
First-year subjects in the Faculty of Business common year. For students without the appropriate Year 12 mathematics, the course, SM147 Quantitative Analysis A, is taken and it consists of four hours per week for two semesters. For students with the appropriate Year 12 mathematics or its equivalent, the course, SM148 Quantitative Analysis B, is taken and it consists of four hours per week for one semester. The content of both courses is the same, but the time allocation is different.

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- Large Systems and Communications;
- Systems Development.

The course is designed to be a blend of theory and practice. Students will write programs, build simple applications on the computer, and use computer software to solve business problems.

Textbook
To be advised.

References
Most introductory books on computers in business.
Textbooks
Australian National Companies and Securities Legislation, C.C.H. or
Australian Government
Printer

References
Cliff, R. Corporate Accounting in Australia. 2nd edn, Sydney: Prentice-Hall of Australia, 1985

BC202 Cost Accounting
Prerequisite, BC 103 Accounting 1C
Cost Accounting is a second-year semester length unit which is mandatory for students taking the accounting stream.

The unit is designed to introduce students to the features of financial information systems that are used for the purpose of cost measurement both for external compliance reporting and internal managerial reporting and decision-making in manufacturing and service businesses. Within this context students will study the application of absorption, variable, job and process costing systems and the different concepts of cost that may be used for measuring and reporting costs.

Textbooks

BC203 Management Accounting
Prerequisite, BC202 Cost Accounting
In this unit the material in BS202 Cost Accounting is built on with the object of developing both the student’s understanding of the role of the management accountant within the management process of an organisation, and to acquire and apply various techniques and concepts designed to prepare and present relevant accounting information to management. Among topics covered are: standard costing; budgeting including computerised financial modelling; budget variance analysis and capital budgeting; evaluation of segment performance and transfer pricing.

Textbooks

References
Hill, R.L., G. Managerial Cost Accounting. 5th edn, Homewood, Ill: Irwin, 1982

BC204 Accounting for Marketing 1
Prerequisite, BC109 Accounting 1C
This unit is a second-year semester length unit which is mandatory for students taking the Marketing stream who do not wish to obtain professional qualifications in accounting.

The syllabus and texts are the same as for BC202 Cost Accounting.

BC205 Accounting for Marketing 2
Prerequisite, BC204 Accounting for Marketing 1
The object in this unit is to provide students in the marketing and economics-marketing streams with an analytical framework and methodology for evaluating marketing decisions.

Impact of marketing decisions on working capital.
Short-run optimisation decisions — products mix, make or buy — linear programming applications.

Capital expenditure decisions in a marketing context.
Financial modelling and its applications to marketing-mix decisions.

The analysis and reporting of marketing performance, segment reporting, problems posed by joint cost.
Transfer pricing between manufacturing and marketing divisions.

References

BE101 Managerial Economic Analysis
Prerequisite, BE101 Economics 1
Students who are contemplating major studies in economics should include this unit and BE202 Industry and Government in their courses.

The unit covers economic analysis and its applications in economic decision-making. Case studies are used to illustrate the concepts involved. It deals with the following topics: demand analysis (including empirical demand studies and forecasting); cost estimation and forecasting; profit and alternative goals of firms; and pricing decisions.

References
Pappas, J.L. and Hirschey, M. Managerial Economics. 5th edn, Chicago: Dryden Press, 1987

BE202 Industry and Government
Prerequisite, BE101 Economics 1
Students who are contemplating major studies in economics should include this unit and BE201 Managerial Economic Analysis in their courses.

The unit examines the major issues in the study of industrial and government policy.

The unit deals with the structure, conduct and performance of industry and the role of government in the economy, the development of our present system of government, and the impact of government intervention on industry. The unit examines the development of our present system and the role of government in the economy, the development of our present system of government, and the impact of government intervention on industry.

The unit considers the different approaches to industry regulation and policy are discussed.

Textbook

Reference

BE203 Industrial Relations
Prerequisite, BE101 Economics 1
This unit aims to equip students with an understanding of the Australian Industrial Relations system with some comparative reference to other countries.

As well as examining the development of our present system, current issues will feature prominently during the semester so that students will gain an understanding of how industrial disputes begin and affect the economy. To further comprehend the processes involved in the resolution of industrial disputes, students will participate in several simulation exercises. The learning experience will therefore include a large element of student participation in addition to formal class work.
Topics to be studied include:
- the nature of industrial conflict;
- the manifestation of industrial conflict;
- the development of Australia’s Conciliation and Arbitration Commission;
- the Award Making process;
- Employer Associations;
- Trade Unions;
- the National Wage;
- worker participation and industrial democracy.

Reference

**BE204 Economic Evaluation**

*Prerequisite: BE101 Economics 1*

This unit provides students with a sound grasp of basic concepts and techniques of economic evaluation for application in areas such as project appraisal, capital investment analysis, budgeting, cost benefit analysis, etc. It draws on the basic principles of calculus and cost-effectiveness studies and aims to develop the student’s ability to solve practical problems in economic evaluation. Emphasis is on the interpretation of economical scenarios and the imprecision associated with them.

**Objectives**

The aim of the unit is to equip students with the techniques and skills relevantly used in economic and market research in business. The course will cover a wide variety of techniques with an emphasis on the design of jobs and work structures, and understanding the elements of uncertain and imprecise information.

**Textbooks**


**BE205 Economic Techniques for Business**

*Prerequisites: BE101 Economics 1 and SM147 or SM148 Quantitative Analysis for Business (or an approved equivalent)*

**Objectives**

The aim of this unit is to equip students with the techniques and skills of quantitative analysis and interpretation of information rather than underlying mathematical theory.

**Course outline**

- Statistical computing
- Data analysis
- Statistical Analysis
- Econometric Modelling
- Simple linear regression
- Multiple regression

**Textbook**

Norusis M. J. SPSS/PC Studentware, SPSS Inc., 1988

**BH202 Organisation Design**

*Prerequisite: BS132 Administrative Studies 1 or BH101 Organisations and Management*

It would be preferable for students to have also studied BH201 Organisational Behaviour 1. A second-year elective in the degree course in business.

The aim of the field of study known as organisation design is to create an understanding of how organisations operate, and how decisions made can affect the effectiveness of the organisation.

**Course outline**

1. The contextual dimensions of organisation:
   - the external environment;
   - goals and effectiveness.
2. Organisation structure and design:
   - The design of jobs and work structures;
   - organisation bureaucracy, size and growth;
   - organisation technology;
   - functional, product and matrix structures.
3. Design influences on dynamic processes:
   - information and control;
   - organisational change.
4. Integrating the total system
5. Organisational research

**References**


**BL201 Contract Law**

*Prerequisite: BL101 Legal Environment of Business*

The general aim of this unit is to enable students to gain an understanding of the law applicable to agreements, and in particular those negotiated during the course of the establishment, and conduct of business. Particular attention is also given to the legal repercussions of concluding an agreement (including the impact of statute) and breaches of obligation.

**Textbooks**

Latimer, P. Australian Business Law. 1989 edn. CCH Australia Ltd or


**References**


Farr, A.A. Australian Insurance Law. Law Book Co., 1987

**Acts of Parliament**

Goods Act 1958 (Victoria)

Goods (Sales and Leases) Act 1981 (Victoria)

Trade Practices Act 1974 (Commonwealth)

Fair Trading Act 1985 (Victoria)
BL202 Law of Business Organisations
Prerequisite, BL101 Legal Environment Business
This unit is compulsory for students in the accounting stream; optional for others.
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, P. and Herzberg, A. Understanding Company Law. 3rd edn, Law Book Company, 1986
References
Law of Companies in Australia. 2nd edn, CCH, 1986
Guidebook to Australian Company Law. 11th edn, North Ryde: CCH, 1988

BL203 Marketing and the Law
Prerequisite, BL101 Legal Environment of Business
The unit involves an examination of the legal controls imposed on the manufacturing, labelling, packaging, distribution, promotion, pricing, and retailing of goods (and where applicable) services.
Topics involved in this study are:
- the liability of manufacturers and retailers of goods at common law and under statute; proprietary interests in products; packaging and labelling of goods; advertising and promotion of goods and services; restrictive trade practices.
Textbooks
Goods Act 1958 (Vic)
Goods (Sales and Leases) Act 1981 (Vic)
Consumer Affairs Act 1972 (Vic)
Trade Practices Act 1974 (Commonwealth)
References

BL204 Computers and the Law
Prerequisite, BL101 Legal Environment of Business
Course objectives
The aim of the course is to enable students to explore:
1. The application of existing law to computer development, manufacturing, acquisition and use.
2. The law in relation to computer abuse.
Course outline
To meet objective (1) above, students will examine the application to computers of existing law and practice pertaining to:
(a) patents and copyright;
(b) negligent manufacture; negligence and strict liability in the lease or rental of computer resources;
(c) performance deficiencies involving breach of contract, breach of warranty or misrepresentations;
(d) output errors or performance deficiencies involving, e.g., defamation or third party economic loss.
To meet objective (2) above, students will examine:
(a) 'computer crime', with a view to assessing the adequacy of the present law to meet the challenge inherent in the successful prosecution of computer criminals; and
(b) the issues of 'invasion of privacy', with a view to determining the appropriate legal response to the dangers of personal data storage.
References
Specialised books, articles and legal cases will be referred to. In addition, students should consult:

BL205 Retailing and the Law
Prerequisite, BL101 Legal Environment of Business
This unit aims to provide a practical knowledge and awareness of the laws which impinge upon the function of retailing, concentrating upon those areas affecting the day-to-day activities of the business.
Topics covered in this unit include the liability of retailers under the laws of contract and negligence, crime and retailing, establishing a retail business, franchising, the retailer and credit, the retailer and safety, trade description and consumer protection laws, and other general rights and duties owed by retailers.
Textbook
No specific textbook is prescribed.
The following statutes will be required:
- Goods Act 1958 (Vic)
- Consumer Affairs Act 1972 (Vic)
- Fair Trading Act 1985 (Vic)
- Trade Practices Act 1974 (Commonwealth)
References
The College of Law. Retailing and the Law Seminar Papers, Sydney: 1986

BM203 Marketing Research
Prerequisites, BM205 Marketing Behaviour and BS204 Marketing Data Management or BE208 Economic Techniques for Business. Unless students study BM206 Marketing Strategy this unit and BM203 Marketing Research concurrently, BM203 is a prerequisite for BM203

Objectives
This unit is designed to extend the knowledge and skills gained from the prerequisite with particular emphasis on the gathering and analysis of data to provide information required for marketing decisions. It is aimed at those individuals who use marketing research as an aid to better decision-making by giving an insight, via hands-on experience, of how marketing research is carried out.

Framework
Marketing research as an aid to decision-making.
Plan a marketing research project.
Develop and write a proposal.
Secondary and primary research.
Collection of information; qualitative and quantitative methods, questionnaire design, sampling.
Data analysis: introduction to using computer packages.
Writing and presenting a report.
Ethical issues in marketing research.

Method of instruction
Lecture and tutorial sessions will be interrelated and will be split approximately 50:50. The experience of several guest lecturers will be drawn upon to illustrate practical applications of course material. Additionally, logbooks, project submissions and class presentations will form part of the learning process.

Textbooks
To be advised.

BM204 Marketing Appreciation
Prerequisite, BM101 The Marketing Concept
This subject has been designed for students in the accounting and computing stream who wish to take only one unit of marketing as an elective post common year. This unit is not available to marketing or economics-marketing students. If after completing this unit a student wishes to take more marketing units, they will not be counted in the degree.
Objectives
— to give students a broad understanding of the marketing environment and an overview of the total business function, in particular with respect to planning and decision-making;
— to enable students to apply their knowledge of accounting techniques, economics and quantitative methods to business decisions;
— to increase the practicality of business education by introducing students to business situations. To achieve this, emphasis is on case study analysis and management games.
Marketing appreciation deals with the fundamentals of marketing and consumer behaviour. The course provides for a broad understanding of marketing planning and introduces students to the techniques of formulating a marketing plan.

Framework
The marketing concept — an understanding of the interaction between the firm and its environment. The market and an analysis of demand — consumer behaviour; consumption and expenditure patterns; the product mix — product, pricing, distribution and promotion decisions.

Methods of instruction
In a course of this nature active participation is essential. The theoretical aspects of marketing are supplemented by practical problems through the use of case studies and fieldwork exercises.

References

BM205 Market Behaviour
Prerequisite, BM101 The Marketing Concept
Market Behaviour is a compulsory subject in the marketing and economics-marketing streams of the Bachelor of Business. It may also be taken as an elective in the accounting or computing streams of the Bachelor of Business or other relevant degree streams.

Unit objective
This subject aims to further develop marketing concepts and show students the importance of these concepts to the marketing planning process. Students should become highly conscious of the pressures and constraints, threats and opportunities which organisations need to cope with and take advantage of in a highly competitive environment. Good marketers also need to have a thorough understanding of markets in general and consumers in particular.

The unit therefore endeavours to give students an understanding of both physical and behavioural aspects of consumers.

Method of instruction
In a course of this nature active participation is essential. The theoretical aspects of marketing are supplemented by practical problems through the use of case studies and fieldwork exercises.

Textbooks

BM206 Marketing Strategy
Prerequisite, BM205 Market Behaviour
Marketing Strategy is a mandatory unit in the economics-marketing and marketing streams and an elective unit in the accounting and computing streams.

Unit objective
The objective of this unit is to examine further marketing concepts at a more complex level, focussing on the marketing planning process as a key skill in organisations’ interaction with the environment.

Specific objectives
— to allow students to consolidate and develop upon the concepts developed in BM205;
— to enhance students’ capacity to critically analyse business situations from a marketing viewpoint;
— to further build students’ orafe and communication skills.

Case studies
Case studies form a major part of the course. The emphasis on business report writing is continued, with more complex reports required. The major assignment requires the development of a business report detailing the marketing plan for an organisation using extensive analytical techniques.

Faculty of Business

BQ201 Quantitative Management Techniques

Prerequisites, SM147/148 Quantitative Analysis or equivalent
The unit provides:
— an awareness of a range of quantitative techniques and their application to a variety of accounting, economic and business problems;
— an understanding of the interrelationships between quantitative techniques and the traditional accounting function in an organisation;
— a basis for a more extensive study of the application of quantitative analysis in subsequent units.

It is the practical solution of specific business problems and in particular on the recognition, formulation and interpretation stages of solution. Areas of study will normally include:
— the general use of resource allocation with emphasis on linear programming; use of quantitative analysis to plan and control inventory levels; forecasting, with particular emphasis on short-term product demand; general approaches to planning and decision-making including elementary decision theory; statistical quality control via control charts and acceptance sampling.

Case studies and assignments are an integral part of the course and are evaluated as part of the overall assessment in the unit. They include the use of computer packages.

Textbook
Anderson, M.Q. and Lievano, R.J. Quantitative Management — An Introduction. 2nd edn, Boston USA: Kent, 1986

References
To be advised during lectures.

BQ202 Business Forecasting

The purpose of this unit is to provide students with:
— an awareness of the various forecasting techniques and their appropriate areas of applicability;
— experience in their application, including the use of packages in areas such as economics, marketing, accounting and finance.

Case studies will form an integral part of the course and use is made of packages and published forecast data.

Course content includes:
— an overview of forecasting methods, their general areas of application and criteria for selection of procedures, including cost-benefit analysis;
— extrapolation methods — time series analysis for both short and long term forecasting. Analysis of trend, seasonal and cyclical factors, identification of appropriate areas for application;
— causal models — use of linear regression models. The appropriate areas of application and the need for cost-benefit appraisal before undertaking;
— the nature and use of input-output analysis. Construction of input-output tables and solution of system. Relationship between the individual firm and national statistics;
— use of leading indicators;
— qualitative procedures — including the role of market research, delphi methods, consensus, etc. in predicting future behaviour and likely scenarios.

Textbook
References
A detailed list of texts, journal articles and other reference material will be made available during the course.

BQ203 Computer Programming and Packages
Prerequisite, BT101 Information Technology
The purpose of the unit is to give students an opportunity to develop solutions to business problems with microcomputers. It is both communication and technical skills already covered in other degree units. The unit has both a programming and a packages component.

Programming
This component is based on using a microcomputer data base package such as dBase III Plus. Students work in groups to analyse, design and create a database solution for a small real-world requirement.

Coverage includes:
- data gathering;
- analysis techniques;
- data analysis;
- modular design;
- structured programming techniques;
- screen design and handling;
- report design;
- menu driven systems.

Packages
A number of microcomputer packages are available for investigation. Students then use, test and evaluate the packages. The range of software used in the past includes graphics, spreadsheets, word processing, desktop publishing and various accessory packages.

References

BQ204 Marketing Data Management
Prerequisites, BM121: Quantitative Analysis A or BM148: Quantitative Analysis B and BM101: The Marketing Concept

This unit has been designed to equip students with the techniques and skills to access and analyse information relevant to the marketing research activities of both private and public enterprises.

This unit will:
- introduce students to a number of data archives, public access databases and videotex — type information systems;
- develop the necessary skills to access information sources using data management and statistical software on microcomputer, and in a mainframe computer environment;
- extend students knowledge of statistical methods necessary for both survey and experimental data analysis.

Textbook
Norusis, M.J., SPSS/PC Studentware. SPSS Inc., 1988

References
SPSSX User’s Guide. 3rd edn, SPSS Inc., 1988
Australian National University Social Science Data Archives. SSD2 Data Catalogue. Canberra: ANU, 1983

BT200 Business Computing
Prerequisite, BT101 Information Technology
This unit is specifically designed for accounting, marketing and economics-marketing students who want further knowledge of computer applications but who will not be taking other units from the computing area.

The unit aims to enable students to understand the development process for business systems and to apply techniques to the development of end-user systems. The emphasis moves away from the BT101 Information Technology aim of understanding the technology, to an identification and evaluation of the technological solutions which may be applied to business problems. The unit also aims to enhance skills in the verbal and written presentation of system studies. The unit is structured for a study of business computing from the user’s point of view rather than from the Information Systems Department’s.

Hands on skills are used to build upon practical skills gained in first year, with emphasis on the evaluation of business packages. Skills previously developed with business software packages will be enhanced and extended.

It is important that students note that this unit does not satisfy the prerequisite requirements of third-year computing units.

Textbook

References
A detailed analysis will be made of articles from industry journals. Also included will be works of

BT201 Information Analysis
Prerequisite, BT101 Information Technology
In some cases BT201 Introduction to Data Processing will be acceptable.

Information is the lifeblood of any organisation and data is the foundation upon which information systems are constructed. Without appropriate and careful analysis of information, systems will not meet their requirements.

It is now widely recognised that the active involvement of corporate management and users is essential to a successful information analysis effort.

This unit aims to provide all business students with the skills necessary to perform information analysis at varying levels of detail.

Students will make use of appropriate software tools to help them develop blueprints for subsequent computer implementation.

By the end of the unit, students should be able to:
1. Precisely analyse business information requirements using techniques which may be applied at a corporate wide level to contribute to the preparation of a Strategic Data Model for an organisation or at a more detailed level to define the requirements for an individual information system;
2. Develop a logical system model for a small application, to be used as a structured design specification;
3. Develop a working prototype database in an SQL-type system for a small application;
4. Select the information analysis approach appropriate to a particular situation from a range of modelling techniques and tools.

Topics covered include the following:
- Systems, data and models;
- Data analysis;
- Detailed data modelling;
- Structured systems analysis;
- Corporate information analysis.

Textbook
To be advised.

References
McFadden, P.R. and Hoffer, J.A., Data Base Management. 2nd edn, Menlo Park: Benjamin/Cummings, 1988
**BT202 Commercial Programming**

Prerequisite: BT101 Information Technology

The main aim of this unit is to give students a thorough understanding of the principles and practice of procedural programming. By the end of the course, students will be able to design, write, test and document attractive well-structured programs in COBOL.

Topics covered include:
- Program structure;
- Data structure;
- Algorithm design;
- Data validation;
- Arrays and tables;
- Sequential files;
- Indexed files;
- Reporting;
- Testing.

Textbook

References

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**BT203 Data Base Management Systems**

Prerequisites: BT201 Information Analysis and BT202 Commercial Programming

Unit objectives

By the end of this unit the student will be able to:
1. Implement a logical data base design in a selection of DBMSs.
2. Design and program transactions against the data base.
3. Include appropriate security, integrity and recovery functions in the above.

Topics

This unit builds upon the logical design concepts taught in Information Analysis, covering the implementation considerations of a number of DBMSs. The students’ acquaintance with SQL from that unit is also built upon in the coverage of Relational Data Bases.

References
Date, C.J. An Introduction to Database Systems. 4th edn, Reading, Massachusetts: Addison-Wesley, 1986
Korenke, D. Database Processing, 3rd edn, Chicago: SRA, 1988

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**BT204 Data Communications**

Prerequisites: BT201 Information Analysis and BT202 Commercial Programming

Unit objectives

The aim of this unit is to enable students to understand the concepts of Data Communications systems and to apply design techniques to such systems.

At the end of this unit the student will be able to:
- **demonstrate a sound knowledge of the concepts and components involved in data communications;**
- design the data communications components of both simple and complex information systems;
- price a simple teleprocessing system;
- understand the requirement for control in data communications systems;
- understand the impact of data communications technology on an organisation at all levels;
- explain how office technologies such as VOICE, TEXT, IMAGE and DATA processing enhance the productivity of office and professional workers.

Textbook

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**BT205 Knowledge Based Systems**

Prerequisite: BT201 Information Analysis

In this unit, students develop an understanding of the nature and practical application of expert systems. The unit involves practical use of 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, laboratory artificial intelligence programs in particular, and human beings who perform tasks requiring expertise;
- 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;
- principles of frame based systems;
- comparative strengths and weaknesses of existing knowledge engineering tools for end users and professional developers.

Textbooks
To be advised.

References

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**BC300 Accounting Theory**

Although there are no formal prerequisites for accounting theory, it is preferable that the unit be studied in the final year of the course.

The objectives of this unit are:
- to examine the development of the theory of accounting and the methodology used by accounting theorists;
- to describe and critically analyse a framework of accounting concepts including assets, liabilities and income;
- to use the methodology and the framework developed in the unit to study some specific issues in financial accounting including accounting for long-term leases, deferred tax accounting, various inflation accounting systems, intangibles, accounting standards development and foreign operations.

Although the subject is concerned with theory, considerable use is made of practical problems in parts of the course. These are designed to illustrate the alternative techniques available while the theoretical framework is used to evaluate and choose between the alternatives.

Textbook

References
Hendriksen, E.S. Accounting Theory. 4th edn, Homewood, [Ill: Richard D. Irwin, 1982

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**Faculty of Business**
BC304 Auditing
Prerequisite, students enrolled in this unit are expected to have passed BC201 Corporate Accounting.

The broad objective of this subject is to familiarise students with the underlying concepts, objectives and reporting function of the auditor. The unit deals with both theoretical and practical aspects of auditing. The aim is to integrate the concepts of auditing with practical approaches taken by the auditor to ensure students gain a complete picture of the audit process.

Theoretical topics studied include auditing methodology and the formulation of auditing standards; audit independence; audit evidence; the rights, duties and legal liability of auditors; the audit report and the concept of truth and fairness; internal control. The various approaches to the sufficiency of audit evidence; computer audits, internal and management audits and materiality.

References
Fraser, D.J. and Aiken, M.E. Stetter's System Based Audit. 3rd edn, Englewood Cliffs, New Jersey: Prentice-Hall, 1986

BC305 Budgeting
Students enrolled for this unit will be expected to have passed BC202 Cost Accounting and BC203 Management Accounting.

This is a final year unit designed to develop and integrate the planning, decision-making techniques and jargon in cost accounting, management accounting and financial management. The unit draws on the areas of organisational behaviour, operations research, economics, computing and marketing. Budgeting is introduced within the context of a corporate planning framework. Both the operating and financial budgets are studied in detail with emphasis on the interrelationships and interdependencies between the various components. The course covers the preparation of budgets for non-manufacturing organisations, with particular reference to zero-based and re justification of analytical techniques required to solve various problems in financial management.

Textbook

References
Anthony, R.N. and Young, D.W. Management Control in Non Profit Organisations. Homewood, Ill.: Irwin, 1984

BC306 Taxation
Prerequisite, students enrolled in this unit are expected to have passed BC201 Corporate Accounting.

The unit involves a study of Australian income tax law and practice with particular attention being given to its significance in business decision-making. Topics covered are the nature of assessable income, allowable deductions and the provisions relating to companies, partnerships and individuals. In this unit, the primary producers; part IVA and tax avoidance; unincorporated entities; issues of assessable income and allowable deductions; superannuation funds and primary producers. Students will be expected to develop a research-oriented problem-solving approach to the unit which includes the following specific topics:

- the study of income tax law and practice;
- the role of the Income Tax Act in determining the tax treatment of business transactions; and

Textbooks
1989 Australian Master Tax Guide. CCH Australia Ltd.

References
Australian Federal Tax Reporter. CCH Australia Ltd.

BC308 Advanced Taxation
Prerequisite, students enrolled in this unit will be expected to have passed BC306 Taxation.

This unit is a final year unit designed for students who require additional experience in taxation issues. The objective of the unit is to acquaint students with the areas of taxation of practical utility by concentrating on the taxation implications of various taxable entities, in particular, companies, unincorporated entities, trusts, superannuation funds and primary producers. Students will be expected to develop a research-oriented problem-solving approach to the unit which includes the following specific topics:

- the study of income tax law and practice;
- the role of the Income Tax Act in determining the tax treatment of business transactions; and

Textbooks
CCH Australia, Australian Tax Cases. CCH Aust. Ltd.

BC311 Financial Management 1
Prerequisites, students enrolled in this unit will be expected to have passed BC201 Corporate Accounting and BC203 Management Accounting.

The objectives of this unit are:

- to provide students with an understanding of concepts and methods employed in accounting and finance that assist management in decision making, planning and control;
- to develop the analytical skills of students with respect to the application of analytical techniques required to solve various problems in financial management;
- to develop the analytical skills of students with respect to the application of analytical techniques required to solve various problems in financial management; and
- to develop the analytical skills of students with respect to the application of analytical techniques required to solve various problems in financial management.

The course is structured from the point of view of orienting the student to the fundamentals of managing the financial aspects of a business and covers the following specific topics:

- financial statement analysis;
- 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; and
- current developments in finance.

Textbook

References
Bruce, R., McKenzie, B., Pollard, I. and Skully, M. Handbook of Australian Corporate Finance. 3rd edn, Butterworths, 1989

BC312 Financial Management 2
No prerequisites, but strongly recommended that students should have completed or be concurrently enrolled in BC311 Financial Management 1.

The purpose of this unit is to help participants learn how to manage their money and develop the skills to be better able to advise others in managing their investments. To accomplish this purpose it is necessary to learn about the investment alternatives available today and more important, to develop a way of thinking about investments that will remain in the years ahead when new investment opportunities arise as a result of the inevitable changes to our financial system.

More specifically, the course objectives are:

- to acquaint participants with the various avenues for the investment of funds, including shares, fixed-interest securities and property; and
- to acquaint participants with the various avenues for the investment of funds, including shares, fixed-interest securities and property;
To view the impact of taxation on investment planning:

To consider the fundamental principles of modern portfolio theory:

To consider the process of portfolio selection and ongoing investment strategies:

To review the characteristics of financial futures and options and how they may be used to modify the risk-return profile of investment portfolios.

References

BC313 Financial Accounting
Prerequisites: BC201 Corporate Accounting and BC300 Accounting Theory

This unit is most relevant to students planning to enter (or in the process of entering) the management fields of chartered accounting or financial accounting in industry.

The objectives of Financial Accounting are:

- to study in depth some of the more advanced issues and problems in the audit context.
- to apply the conceptual framework studied in Accounting Theory to the evaluation of the abovementioned contemporary financial accounting issues.

Course content
The conceptual framework; accounting information and share prices; aspects of group accounting; off balance sheet financing; rate of return accounting for government enterprises; debt defasance; cash flow accounting; financial forecasts; tax effect accounting; and segment reporting.

The syllabus is flexible to allow new financial accounting issues which may be of significance to the profession.

References
Various current Exposure Drafts and Standards issued by the Australian Accounting Research Foundation and the Accounting Standards Review Board.

BC314 EDP Auditing
Prerequisite: students enrolled in this unit will be expected to have passed BC304 Auditing

This unit is useful for students planning to enter the subject of EDP Auditing.

The objectives of the unit are:

- to provide students with an understanding of computerised accounting information systems and the application of statistical and analytical techniques in the audit context.
- to study 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.

References

Faculty of Business

BE301 Public Finance
Prerequisite: BE101 Economics 1

This unit 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 paradigm 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 commodities 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 focus on cost-benefit analysis)

References
Brown, C.V. and Jackson, P.M. Public Sector Economics. 3rd edn, London: Martin Robinson, 1987

BE302 Economic Research
Prerequisite: BE201 Managerial Economic Analysis or BE202 Industry and Government

The intention in this unit is to broaden students’ familiarity with the nature and scope of research undertaken in economics, and to increase students’ ability to analyse and carry out economic research of a practical nature.

Topics may include: methodology in economic research; data sources; collection, analysis and presentation of data; selected topics in applied economic research (economic model building, cost-benefit analysis, industry studies, aspects of industrial relations).

An integral part of this unit is a major research project. Students are expected to conduct an investigation and write a report on their research which will constitute a major proportion of the assessment in this unit.

References
There is no single prescribed reference for this course, but extensive use is made of current journal articles.

BE303 Monetary Economics
Prerequisite: BE101 Economics 1

Objectives
To provide students with:

- an understanding of the major monetary theories and implications of these theories;
- knowledge of the structure, functioning and development of Australian and international institutions and markets; and
- an appreciation of the nature and workings of the Australian monetary system and changes in this system.

Course outline
Monetary theories — classical, Keynesian, modern quantity, Neo-Keynesian, Australian and international financial markets — nature and developments, Australian monetary system and change — nature of change, analysis of implications of change for monetary and finance systems.

References
Nicholls, L. and Smith, E. Money and Banking. Nelson, 1989
BE304 International Economics
Prerequisite, BE101 Economics 1
This unit provides a study of international finance and trade with special reference to Australia. Topics covered include: the nature of foreign exchange markets and the determination of exchange rates; balance of payments adjustment mechanisms; internal and external policy mixes — Australian policy aspects; international financial arrangements — historical developments, and current issues; the basis of international trade and the determination of trade patterns; trade restrictions; alternative approaches to industry development; Australia's industry assistance policies — current debate; international development issues and economic integration.

References
Lindert, P.H. International/Economics. 8th edn, Homewood, III: Irwin, 1986

BE305 Urban Economics
Prerequisite, BE101 Economics 1
In this unit, students develop an analytical approach to appraising urban problems and policies. While the emphasis is on economic analysis, part of the course is devoted to discussing sociological and town planning perspectives of urban problems. The unit covers the following broad areas: urban location decisions, government and private roles in urban development, housing, transport, and human resource delivery.

References

BE306 Economics of Social Issues
Prerequisites, BE201 Managerial Economic Analysis or BE202 Industry and Government r BE204 Economic Evaluation
This course examines both the uses and limitations of orthodox economic theory in understanding many of the important social, economic and political issues that are current in Australia today. In so doing the course will further students' understanding of the roles of both business and government in furthering society's objectives.
Issues considered will include the distribution of income, wealth and poverty, the role of public and private enterprise and the roles of government and the law in the provision of education, transport, energy and environmental protection.
The unit endeavours to teach students the theory and principles needed to be able to analyse social issues from an economic perspective.

Textbook
Because of the contemporary nature of the unit no textbook is set. Comprehensive reference lists will be provided.

BH301 Organisational Behaviour 2
Prerequisite, BH201 Organisational Behaviour 1
The aim of this unit is to focus on the development of personal and interpersonal skills with the intention of facilitating participants’ transition to the world of work. It is assumed that in addition to technical skills developed in other subjects of the Business School, students should have the opportunity to develop a sound conceptual framework and skills associated with interpersonal behaviour. This course focuses first on theories of Freud, Berne, Jung and Kopp, together with associated skills appropriate to the workplace, for example conflict, resolution, transactional analysis and negotiation.

Textbooks and references
O’Keefe, F. Understanding Yourself. Australia: Methuen Paperback, 1985
Other readings will be given to participants during the course.

BH302 Human Resource Management
Prerequisite, BH101 Organisations and Management
The human resources of an organisation are one of its major assets and the focus of this unit is on the understanding and management of those resources through the application of appropriate techniques, functions and management approaches.
The unit aims to enable students to understand the nature and importance of human resources as an organisational asset and to provide a knowledge of the theories, techniques and approaches to dealing with people-related problems and issues.
The unit is divided into seven sections:
- the nature and importance of human resources;
- staffing the organisation;
- analysing, evaluating and compensating work;
- analysing and improving the work environment;
- training and developing people;
- establishing and maintaining effective employee relations;
- managing change.

This subject usually includes some class work in the Management Behaviour Laboratory, where current topics in such areas as human resource management and training and development are covered. For this reason, 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 convenor.

References

BL301 Advanced Company Law
Prerequisite, students enrolled in this unit are expected to have passed BL201 Law of Business Organisations
This unit is designed to cover advanced topics in company law and is especially relevant to a practice in accounting. The course examines current topics in such areas as the constitutional and legal framework of company law, company law in Australia and the role of public and private enterprise and the roles of government and the law in the provision of education, transport, energy and environmental protection.
The unit is divided into seven sections:
- the nature and importance of human resources;
- staffing the organisation;
- analysing, evaluating and compensating work;
- analysing and improving the work environment;
- training and developing people;
- establishing and maintaining effective employee relations;
- managing change.

This subject usually includes some class work in the Management Behaviour Laboratory, where current topics in such areas as human resource management and training and development are covered. For this reason, 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 convenor.

References
Detailed references to journal articles will be given to students.

BL302 International Marketing and the Law
Prerequisite, students enrolled in this unit are expected to have passed BL201 Contract Law or BL203 Marketing and the Law
The purpose of the unit is to consider the legal aspects of international trade emphasizing the following topics:
- international contracts of sale of goods, including a study of trade terms, performance of the contract, acceptance and rejection of goods, and the rights of the unpaid seller and buyer;
- the proper law of a contract and jurisdiction to determine disputes;
- financing and insurance involved in export sales, the role of tariffs and protection policies;
- producer and commodity agreements;
- methods of transportation and distribution of goods and the legal principles relating thereto;
- international conventions for the protection of industrial property;
- international franchising.

References
Hoyle, M.S.W. The Law of International Trade. CCH Australia Ltd, 1985
BL303 Employment Law
Prerequisite, BL101 Legal Environment of Business

The general objective is to assess the impact of law upon the relationship of employer and employee. The following matters are analysed in this unit:

(a) the contract of employment—formation of the contract of employment including discrimination and compulsory unionism, distinguishing an employee from an independent contractor, e.g. of the client or employer’s common law for termination;
(b) the arbitration system—the structure of the Australian Arbitration System, the constitutional context, the system in operation in settling disputes and making awards.
(c) Industrial conflict—penal powers under the arbitration system, deregistration, common law liability for industrial action, statutory liability for industrial action;
(d) Occupational Health and Safety—common law remedies, the Victorian Worker’s Compensation Act, the role of law in occupational health and safety, common law remuneration, etc.;
(e) Health and Safety—common law liability for industrial action, statutory liability for industrial action;

References
Punch, P. Law of Employment in Australia. CCH Australia Ltd, 1989

BL304 Finance and Credit Law
Prerequisite, students enrolled in this unit will be expected to have passed BL201 Contract Law

The objective of the unit is to extend and develop the principles of contract by studying the following areas. The financier of contractual obligations, the alternative methods of securing financial obligations and the insuring of property acquired pursuant to contract. By analysing these areas students will develop an awareness of problems associated with presently. For example, a finance company’s ability to protect itself against default and any consequent need for reform.

References
No one textbook covers all the relevant areas of study. Reading materials and reading lists will be made available to students.

BM302 Business Cases
Prerequisite, BM205 Marketing Strategy

This unit is concerned with how business and non-business organisations make and carry out decisions. Business Cases is a challenging course as students are given an opportunity to apply their knowledge of marketing, as well as the various other units which make up the Bachelor of Business, to practical situations.

Objectives
To enable students to interrelate the disciplines taught at various stages of their studies, and to give students an opportunity to develop and expand their analytical and communication skills.

Framework
- The course deals with the planning and implementation of strategies, major topics in the use of strategic formulation, strategy analysis, and strategic decision-making.
- Means of achieving objectives
- Emphasis is placed on the appreciation of strategy, and on the analysis of case studies and the use of intangible assets as important aspects of the course. Students may also be given opportunities to investigate a real-life business/non-business problem.

References
To be advised.

BM303 Marketing of Services
Prerequisite, BM206 Marketing Strategy

More than 40% expenditure is directed at the services sector. This unit explores the major differences between the marketing of services as distinct from product marketing, and aims at providing students with special skills required to develop marketing strategies in service businesses.

Faculty of Business

 BM304 Advanced Marketing Research
Prerequisites, BM206 Marketing Strategy; BM203 Marketing Research; and BM204 Marketing Data Management or BE203 Economic Techniques for Business

Objectives
This unit is designed to provide marketing and economics-marketing students with a preparation for a career in market research, either as a specialist buyer or a provider.

Framework
Two streams may be offered.
1. Quantitative
   - Study design
   - Applications of attitude measurement to marketing problems
   - Factor analysis
   - Multi-dimensional scaling
   - Cluster analysis
   - Automatic interaction detection
   - Discriminant analysis
   - Conjoint analysis
   - New product research
   - Data base systems
   - Monetary evaluation of research
2. Qualitative
   - In-depth interviews
   - Focus groups

Method of instruction
In addition to standard lectures, extensive use will be made of guest lecturers drawn from the market research industry. Group assignments, presentations and log book submission will also be important aspects of learning. The qualitative research will use the facilities of the Swinburne Management Laboratory.

Textbook
Details will be provided at the first session.

BM305 Retail Marketing
Prerequisite, BM206 Marketing Strategy, BM203 Marketing Research

Retail Marketing is an elective unit in the marketing stream of the Bachelor of Business.

Unit objectives
The unit aims to provide an overview of retailing from a management perspective, providing a range of specialist skills not covered by other units but which are particularly relevant to retailing in Australia in the 1990s.

Topics
- 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 retailer buyer;
- retail buyer behaviour;
- merchandising strategies;
- franchising.

Textbook
To be advised.

References
To be advised.
BM306 Advertising and Media Planning
Prerequisite, BM206 Marketing Strategy, BM200 Marketing Research
This unit is an elective subject for the degree course in Business.

Unit objectives
This is not a course about how to create advertisements. It is not a course in headline writing, typography, radio production or any of the other wide range of creative skills which contribute to the success of any advertising campaign.

This unit is about the underlying process of advertising; it is about the principles which are involved in developing sound advertising strategies and effective executions of these strategies.

Topics
— introduction to advertising;
— the advertising process;
— the client advertising brief — clientagency view;
— the advertising creative process;
— advertising media in Australia;
— sales promotion;
— public relations and publicity;
— advertising research;
— the media scene and the media plan.

Textbooks
To be advised.

References
To be advised.

BM309 Product Management
Prerequisite, BM202 Marketing Strategy
The course ‘Product Management’ is a third year unit in the Bachelor of Business undergraduate degree course.

Unit objective
Students enrolling in this subject come prepared with an understanding of basic marketing concepts, from first year studies, that have in turn been enriched at second year level with the subjects Market Behaviour and Marketing Strategy.

The objective of this unit is to enable students to apply their marketing knowledge to the specific area of Product Management. Within this broad objective, there are a number of specific objectives. These specific objectives are central to the management approach, that is to say, emphasis is placed on other approaches such as economic, technical or purely creative. These areas are not ignored but they are treated as contributory disciplines.

Specific objectives
— 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 development and product re-launches;
— to understand the importance of:
 - product positioning within the target marketing process
 - branding
 - packaging
 — 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 relationships within the organisation, particularly with sales, production, supply and research and development, in the product development process.

Textbook

BM310 Strategic Marketing Cases
Prerequisites, BM309 Product Management, BH201 Organisation Behaviour
This subject consists of two parts:

Part 1: Strategic Marketing cases
Objectives
Strategic Marketing cases (Part 1), is designed to enable students to integrate and apply the concepts and techniques taught in the prerequisites units of the Bachelor of Business (Marketing). The unit also addresses the strategic aspects of marketing issues.

More specifically, the objectives are:
— to link corporate strategic planning with marketing planning;
— to clarify the role of marketing in relation to the other functions in an organisation including interfunctional/conflict;
— to introduce:
 — key issue management
 — management of time;
— to further develop report writing and presentation skills;
— to further improve the ability of students to:
 — think through business and non-business problems;
 — provide creative as well as practical solutions;
— to encourage students to use computers in their analysis.

Unit implementation
The emphasis of this unit will be placed on case study analysis. The importance considerations is to encourage students to use the materials taught in the previous units and to insist on solutions which can be realistically implemented.

In order to ensure that students understand the interrelationship between marketing and the other functions of an organisation, a number of sessions will be devoted to ‘Market Management in Action’.

Time permitting, a marketing simulation may be given to ensure students capability in:
 — using market research data;
 — dealing with competition;
 — dealing with the interlinking of business functions.

Texts
Cravens, D.W., Strategic Marketing, 2nd edn, Irwin, 1987

Part 2: Selling process and skills
Objectives
At the completion of this part of the course, students will be able to:
— explain the different roles played by each of the following members of a Sales Department:
 — merchantiser
 — sales representative
 — district sales manager
 — regional sales manager
 — general sales manager;
— perform each of the stages of the selling process from prospecting through to after sales service;
— conduct a sale negotiation using selling techniques and a knowledge of a product;
— observe a sale and identify the steps in the selling process as they occur;
— observe a sale in action, and identify areas for improvement in the technique.

Unit implication
Selling process and skills is run in a participatory manner and students are expected to actively express their point of view in class. A high standard of oral and written communication skills is expected. As this is a third year subject, students are treated as practising managers and assumed to be capable of performing accordingly.

Textbook
Stanton, W. J. & Buskirk, R. H. Management of the Sales Force. Irwin, 1978
BT301 Systems Development Strategies

Prerequisites, BT203 Data Base Management Systems and BT204 Data Communications

This unit will build on the technical knowledge gained in earlier units and provide students with an understanding of the various ways in which the total corporate computing environment can be designed to meet corporate information needs and support corporate goals.

Objectives
At the end of the course the student will be able to:
- describe the methodologies in use in meeting corporate information needs and support corporate goals.

Topics covered
- information systems theory;
- decision support systems;
- processes with traditional life cycle development;
- application packages;
- user driven computing;
- fourth generation languages;
- prototyping;
- Computer Aided Software Engineering (CASE) tools;
- participative design;
- information systems issues for management.

Textbook

References

BT302 Systems Software

Prerequisite, completion of second-year data processing units

This unit is concerned with software constructed for a range of hardware. It concentrates on the MV/SA operating system which is currently run on the Institute's IBM 3090. It briefly examines the other operating systems environments considered, such as PICK and UNIX. In addition, when time permits, a range of hardware features, from mainframes to microcomputers, are surveyed.

Textbooks
To be advised during lectures.

References
Manufacturers Manuals

BT303 Industrial Project

Prerequisites, BT203 Data Base Management Systems and BT204 Data Communications

This subject counts as two units.

Major objectives
- To apply many of the principles/techniques learned elsewhere in the course as possible to a practical situation.
- To develop their understanding of information systems design and management.
- To allow students to gain some experience of project planning and control, self-organisation, working in a team, commitment to task completion.
- To develop the students' skills in varied programming languages.

Theory content
- Project management and control.
- Systems Analysis.
- Advanced Topics Programming topics.
- Seminars run on demand to meet the requirements of particular projects.

Project content
1. Introduction
Projects will be solicited from both external organisations and within Swinburne. It is anticipated that projects selected will be regarded as noncritical by the sponsoring organisation and of a size that allows completion within the available time frame.

2. Project teams
Project teams of about four students will generally be allocated by the convener in consultation with the project supervisors. Teams will be responsible for the performance of the project in terms of control and task allocation.

3. Deliverables
(a) Systems analysis phase
- Report
- Presentation
(b) System design phase
- Report
- Presentation
(c) Implementation phase
- User documentation
- Systems documentation
- Presentation of working system
(d) Project control documentation

References
Reference material will be nominated or issued as required.

BT304 Programming and Hardware

Prerequisite, BS302 Systems Software A

The aim of this unit is to introduce the student to a deeper understanding of computer hardware and to enable the student to use an assembly language.

Topics will be selected from:
- What is an assembly language? Why is it used? The hardware and software environment.
- Writing programs in assembly language. Debugging techniques.
- Graphics programming.
- Computer hardware.

This is a practical unit and substantial programming exercises will be given.

References
References appropriate to the hardware and software used will be given.
Graduate Diploma Units

**BC503 Introduction to Financial Management**

**Prerequisite:** Nil

A first-year unit in the graduate diploma course in business administration.

The objectives of the unit are firstly to develop the student's ability to understand, interpret and use corporate financial statements as an information source and secondly to develop in the student an understanding of the accounting information system which exists within an organisation for the purpose of supplying relevant and timely information for management decision making.

No prior knowledge of accounting is assumed.

Applicants who have previously studied accounting at a tertiary level or are working as accountants are precluded from taking this unit.

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

**Textbook**

**References**
McDonald, R.C., Cooper, R.G. and Astill, B.J. Accounting for the Non-Finance Executive. 2nd edn, New Zealand: Longman Paul, 1983

**BC504 Corporate Financial Management 1**

**Objectives**
- 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.

**Course outline**
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 unit are expected to have passed BC504 Corporate Financial Management 1

**Objectives**
This unit is designed to develop an understanding of the way in which firms plan and manage their financing and investment strategies.

**Course outline**
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**
Bruce, R., McKern, V., Pollard, L. and Skelly, M. Handbook of Australian Corporate Finance. 3rd edn, Sydney: Butterworths, 1989

**BC550 Current Issues in Accounting**

Current Issues in Accounting is a mandatory unit in the graduate diploma course in accounting. It carries a weighting of 15 units.

The unit incorporates within it the Accounting module of the Institute of Chartered Accountants' Professional Year.

The major emphasis in the course is an in-depth coverage (both practical and theoretical) of the Accounting Standards. Current exposure drafts and recent developments in reporting requirements of the Companies Code are also studied.

**Assessment**
By one case study and a final exam.

**References**
The Institute of Chartered Accountants in Australia, Member's Handbook Australian National Companies and Securities Legislation, latest edn.

**BC551 Taxation**

This unit is compulsory for the graduate diploma course in accounting (Professional Year Higher Degree Program).

The course covers topics relevant to the Professional Year assignments and final examination in the Taxation Module set by The Institute of Chartered Accountants. The unit has a weighting of 15 units.

**References**

**BC553 Auditing and EDP**

**Prerequisites:** BC504 Auditing and BT101 Information Technology, or suitable equivalents

The increasing dependence of all types of organisations on computer-based systems has brought about a need for new approaches to auditing. In this unit it is intended to acquaint people with some auditing computerised systems.

Topics covered include: revision of basic data processing principles; the audit role in systems development; the design functions and development of controls; processing and program controls; the computer audit trail; auditing packages; appraisal of control requirements in the various processing options, e.g. bureaux, time-sharing, etc.; auditing advanced systems, e.g. on-line systems, data base, etc.; internal control questionnaire for EDP.

The teaching method is by lectures, seminars and practical case work. A major case study is undertaken.

**References**
Specific articles and texts are referred to when completing each topic area.

**BE501 Economics**

No prior knowledge of economics is assumed. Applicants who have mapped in economics at a tertiary level are advised to enrol for another postgraduate diploma subject. Those who have studied economics at secondary level or who feel they need some time to refresh their course some time ago are enrolled in this subject.

The topics to be covered are drawn from: markets, resource allocation, efficiency and demand; production and costs; pricing and profit; industry economics including public policy aspects; aggregate demand and supply analysis; money and economic activity; employment and unemployment; inflation; monetary, fiscal, balance of payments and prices/incomes policies.
BE503 Financial Institutions and Markets

Objectives

To provide students with:
1. an understanding of the structure, functioning and development of the Australian financial system and its management;
2. an appreciation of the nature and workings of the Australian financial system and its management.

Course outline

- Liquidity and money
- Definition of money
- Supply of money and liquidity
- Financial markets and institutions
- Nature and role of financial intermediaries
- Growth and description of Australian financial intermediaries
- Impact of deregulation on the financial environment
- Australian, international finance markets
- Nature and developments
- Analysis of changes for Australian financial markets and monetary authorities

Effects of liquidity and money on economic activity
- Determination of interest rates
- Keynesian and monetarist transmission mechanisms

References


A detailed reading guide will be issued at the start of the semester.

BE504 Nature and Characteristics of Markets

This is a one-semester unit for students in the graduate diploma course in market forecasting.

Objectives

The unit will provide an introduction to aspects of microeconomics which will promote an understanding of the nature and characteristics of markets. Students will become familiar with the analytical methods which enable them to evaluate critically the policies of firms and the policies of government and regulation/deregulation of markets.

Topics include:
1. The nature of markets dealing with aspects such as:
   - problems of definition
   - markets and resource allocation
   - alternative market structures
   - structure of the Australian economy
2. Demand analysis
   - demand functions and curves
   - empirical demand studies
3. Supply analysis
   - short-run and long-run production decisions
   - short-run and long-run cost analysis
   - profit and goals of firms
4. Market regulation
   - alternative approaches
   - regulation in Australia

References


BHS501 Administration of Organisational Systems

Prerequisites: no prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential.

A first-year unit in the graduate diploma courses in business administration and management systems.

This unit constitutes an examination of organisational problems in the implementation of corporate strategy with particular emphasis on the relationship between strategy, structure, process and people.

The learning experience depends largely on the involvement and experience of the students, who bring knowledge and skill to the task. The lecturer's role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.

Theoretical models are applied to problems in order to permit impartial analysis of organisational issues.

Experience is also gained in co-operative group preparation of material and presentation to the class.

The project is a series of situations through which the student has access. The value of theory as a means of expanding the range of a manager's decisions and actions is the basis of this course.

Framework

The main topics include:
- the organisation as a system;
- analysis of organisational environments;
- analysis of organisation goals and values;
- influence of technology;
- structural types and options;
- components of the organisational systems;
- the organisation as a system;
- design of rewards, restraints and controls;
- managing in the total system.

Textbook


SPSS/PC Student Package

References


BHS502 The Organisation

A first-year subject in the graduate diploma course in organisation behaviour.

The subject is concerned with:
- different ways (metaphors) for looking at and thinking about how we organise;
- the interrelationship between behaviour and structure, both conscious and unconscious;
- the individual and collective investigation of the strengths and weaknesses of differing forms of organisations;
- expanding the ability of participants as thinkers and actors within organisations.

References

Bolman, L. and Deal, T. Modern Approaches to Understanding and Managing Organisations. San Francisco: Jossey Bass, 1984
BH503 Personnel and General Administration

A unit in the graduate diploma course in accounting. Four sessions are spent on industrial law. The remaining sessions cover the topics of personnel practices, the personnel function and some related aspects of general administration. These sessions consider the nature of good personnel practice and the scope of the personnel function. The role of the personnel department in organisations, both now, historically and in the future. The relationship between the functions of personnel management and the personnel function of management. The alternatives available for the proper conduct of the personnel function in small companies without a personnel manager.

Particular attention is given to staff and training: manpower planning, employee relations, and services recruitment and selection, training, performance appraisal, salary and wage administration, promotion, organisational development, and the way these various aspects can be related to a comprehensive integrated system of personnel management. Lectures will be supported by experimental exercises and other participative activities.

Textbook

References

BL501 Secretarial Practice and Procedure

This unit is intended to equip potential company secretaries for their future careers.

Topics covered include:
- meetings and conferences, duties of chairman, organisation, minute-taking, managing orders, terms and expressions, etc.;
- board meetings; preparation, agenda and minutes, quorum, voting rights, powers of members’ motions;
- documentation, including annual return and registers; various ways of raising finance; winding-up procedures;
- the Board and the Stock Exchange; reporting and procedures, listing requirements and terminology, voluntary and statutory controls, etc.

Textbooks
AASE. Listing Requirements Companies Code 1981

References
Horsley, M.G. Meetings, Procedure, Law and Practice. 4th edn, Sydney: Butterworths, 1984

BL502 Legal Aspects of Finance

Prerequisites: no prerequisite studies in law are required. Students who have not studied law previously are expected to become familiar with the basic legal institutions and reasoning processes and with basic principles in contract and company law, prior to embarking upon a study of this unit. Materials are provided and texts referred to for this purpose.

Objective
This unit is intended to promote an in-depth awareness of those areas of law which have an impact upon the corporate finance function. Where appropriate, attention is given to the need for law reform.

Course outline
A study will be made of commercial and revenue law applicable to:
- selected aspects of equity, e.g., redeemable preference shares, corporate repurchase of shares, corporate financing of acquisitions of its own shares;
- selected aspects of debt including convertible notes, negotiable instruments, debentures, receivers, charges, negative pledges, EFT and euro-currency loans;
- leasing, factoring and project finance;
- selected financial institutions, e.g., short-term money market, futures exchange, second boards of stock exchanges.

References

Detailed references to journal articles will be given in classes.

BM501 Marketing Management

Prerequisite: nil

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 fundamental concepts of marketing, marketing planning, consumer behaviour and approaches to looking for market opportunities.

Methods of 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.

Course framework

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
Details will be provided at the first session.

References

BM502 Selecting and Influencing Markets

Prerequisite: BE501 The Nature and Characteristics of Markets

Teaching method

One three-hour class per week for one semester.

Fieldwork exercises, a study of case discussion and exercises will emphasize the practical nature of the course and enable concepts to be applied to real world situations.

Objectives

This unit is oriented towards the behavioural and psychological aspects of individuals in the market place, and lays the foundation for forecasting activities at this level of aggregation.

- to introduce students to marketing decisions and the specification of relevant data required;
- to enable students to understand the components of a marketing plan;
- to allow the distinction to be made between the demand for a class of goods and a market segment;
- to provide students with an ability to look for market opportunities;
- to introduce students to pricing, product, purchasing, promotion and distribution decisions;
- to introduce students to international marketing.
Course content
Both business and non-business organisations must look for and satisfactorily serve one or more markets to achieve their goals and objectives. This subject deals with marketing planning and market analysis (the structure and dynamics of specific markets). Marketing planning is introduced because an understanding of the marketing decision process will assist a manager in the specification of the relevant data required to make decisions. Market analysis is introduced as most markets can be divided into market segments each varying in size and requiring a different marketing plan and set of resources.

Textbooks

References
A large number of references including 0 monographs and journal articles will be utilized throughout the course. These will be detailed to participants at the appropriate time.

BQ502 Database Sources and Methods
This unit will:
1. introduce students to a number of videotext-type information systems, public access databases and data archives;
2. develop the skills necessary to access the information technologies in (1) above to enhance research skills;
3. provide the training necessary for students to develop their own databases on both micro and mainframe computer systems.

Topics
- videotext: electronically published information for mass public audience, the technology, the cost, the benefits, access to VATEL and other generally available systems;
- public access databases: retrieval of bibliographic and numeric data;
- access issues: the selection of information, the price, copyright, security, confidentiality, reliability and quality. Australian Bureau of Statistics computer based information system and electronic services including AUSSATS and TELESTATS;
- techniques for analysing and processing secondary data sources using SAS, SPSSX and DATA/EN/CONS. Particular attention will be given to the access and analysis of census data and other significant sample survey data collections such as the Household Expenditure Survey;
- techniques for building a database using: (i) dBASE III or similar personal computer product, (ii) SIM or similar mainframe product.

References

BQ503 Business Forecasting 1
Prerequisite: BQ502 Database Sources and Methods
This unit introduces the basic concepts and techniques for time series forecasting and gives students experience and practice in the main forecasting methods: the deterministic, the random, and the combined methods. Following is an overview of time series forecasting.

Textbook

References

BQ502 Database Sources and Methods
Textbooks

References
A large number of references including 0 monographs and journal articles will be utilized throughout the course. These will be detailed to participants at the appropriate time.

BQ502 Database Sources and Methods
This unit will:
1. introduce students to a number of videotext-type information systems, public access databases and data archives;
2. develop the skills necessary to access the information technologies in (1) above to enhance research skills;
3. provide the training necessary for students to develop their own databases on both micro and mainframe computer systems.

Topics
- videotext: electronically published information for mass public audience, the technology, the cost, the benefits, access to VATEL and other generally available systems;
- public access databases: retrieval of bibliographic and numeric data;
- access issues: the selection of information, the price, copyright, security, confidentiality, reliability and quality. Australian Bureau of Statistics computer based information system and electronic services including AUSSATS and TELESTATS;
- techniques for analysing and processing secondary data sources using SAS, SPSSX and DATA/EN/CONS. Particular attention will be given to the access and analysis of census data and other significant sample survey data collections such as the Household Expenditure Survey;
- techniques for building a database using: (i) dBASE III or similar personal computer product, (ii) SIM or similar mainframe product.

References

BQ503 Business Forecasting 1
Prerequisite: BQ502 Database Sources and Methods
This unit introduces the basic concepts and techniques for time series forecasting and gives students experience and practice in the main forecasting methods: the deterministic, the random, and the combined methods. Following is an overview of time series forecasting.

Textbook

References
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 technical skills in;
  - data modelling;
  - data analysis, structured analysis;
  - use of CASE tools;
  - database design and implementation;
  - written skills of report writing and essays;
  - data entry and input design.
- developing an understanding of data communication concepts with a view to efficient network design;
- evaluating the effectiveness of computerised information systems.

The development of techniques for communication with both users and other computing professionals:
- fact gathering techniques of interviewing, questionnaires, sampling, etc.;
- verbal communication skills for various forms of presentations;
- systems documentation techniques of structured analysis.

**References**

- [Advanced Structured Analysis](http://example.com/book1)
- [Understanding Information Technology](http://example.com/book2)
- [Data and Models](http://example.com/book3)
- [Structured Programming](http://example.com/book4)

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**BT504 Introduction to Information Technology**

**Unit objectives**

This unit will provide an introduction to information technology and how it is used by businesses and organisations.

At the completion of this unit the student will be able to explain:
- basic computing concepts and common output, input and storage methods and devices;
- different ways of using computer systems and alternative hardware strategies that may be adopted;
- how data is organised and managed in computer files;
- why and how knowledge based systems are being developed and used in business;
- how to develop and test a small computer program;
- communications techniques and technologies currently in common use. Laboratory work will support the above.

**Textbook**


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**BT505 Software for End Users**

**Unit objectives**

This unit is designed to provide students with a practical working knowledge of a number of the major categories of end-user software packages available for business applications. The course comprises four major topic areas taught during a one-hour class and a three-hour laboratory session each week. The class will be for presentation of theoretical aspects for each topic, case studies and exercises. The laboratory sessions will be for 'hands-on' usage and evaluation of nominated packages.

**Topics covered include:**
- word processing;
- spreadsheets;
- data base systems;
- graphics;
- databases.

**Particular emphasis throughout the unit will be given to current developments in computing that relate to increasing end-user productivity.**

**References**

[Structured Cobol Programming](http://example.com/book5)

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**BT506 Information Analysis**

**Prerequisite:** BT504 Introduction to Information Technology

Information is the lifeblood of any enterprise and data is the foundation upon which information is built. Without appropriate and careful analysis of information needs, systems will not meet their requirements.

It is now widely recognised that the active involvement of corporate management and users is essential to a successful information analysis effort. This unit is to provide students with the skills necessary to perform information analysis at varying levels of detail.

Students will make use of appropriate software tools to help them develop blueprints for subsequent computer implementation.

By the end of the unit, students should be able to:
- precisely analyse business information requirements using techniques which may be applied at a corporate-wide level to contribute to the preparation of a Strategic Data Model for an organisation or at a more detailed level to define the requirements for an individual information system;
- prepare a logical system model for a small application, to be used as a structured design specification;
- develop a working prototype database in an SQL-type system for a small application;
- select the information analysis approach appropriate to a particular situation from a range of modelling techniques and tools.

**Topics covered include:**
- systems, data and models;
- data analysis;
- detailed data modelling;
- structured systems analysis;
- corporate information analysis;
- corporate data modelling.

**Textbooks**

To be advised.

**References**


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**BT507 Computer Programming**

**Prerequisite:** BT504 Introduction to Information Technology

**Unit objectives**

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 program definition through to program testing;
- discuss the principles of structured programming;
- explain the importance and philosophy of testing;
- design a logical and 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:**
- program structure;
- data structure;
- algorithm design;
- data validation;
- arrays and tables;
- sequential files;
- reporting;
- indexed files;
- interactive programming;
- testing.

**Textbook**


**References**

AB641 Psychology and Interpersonal Skills
This subject is designed for students taking the graduate diploma course in organisation behaviour.

The course comprises:
- Three hours per week for two semesters. In addition, approximately four evening seminars plus one residential weekend plus two one day seminars.

The objectives are:
- to introduce psychological concepts and techniques relevant to personal and interpersonal behaviour;
- to equip participants understand their own perceptions, values and attitudes, and to gain insight into how these may influence behaviour;
- to increase options for behaviour (mainly communications) through learning appropriate skills. Methods used are largely co-operative and practical rather than didactic and theoretical. Active group participation is therefore necessary.

Assessment is on a pass/fail basis appropriate to the learning methods used. Students are required to keep a day-to-day journal which will include a record of skills, etc. Students are also required to submit two minor written assignments. There is a written final examination because of the experimental nature of this subject, a minimum 80% attendance is required.

This subject usually includes some class work in the Management Behaviour Laboratory where activities may be observed and recorded. The Code of Ethics requires students to sign a consent document at the beginning of semester. Any further queries about this matter should be directed to the subject convenor.

References
Extensive reading and other resources will be given as appropriate.

BC603 Investment Analysis
No formal prerequisites are required

This is a mandatory unit in the graduate diploma course in accounting (Professional Year Higher Degree Program).

Objectives
- To acquaint candidates with the various avenues for the investment of funds;
- To evaluate techniques of portfolio selection and management.

Course content includes a review of various avenues for the investment of funds and their taxation implications followed by a review of techniques used by security analysts to assess performance and value securities. The latter half of the course considers portfolio selection and management techniques, particularly the use of the futures and options markets.

Textbook

References
Ball, R., Brown, R., Finn, F. and Officer, R. Share Markets — Portfolio Theory, Queensland, Q.U.P., 1980

BC604 Financial Structures and Policy
Prerequisite, a pass or preclusion from BC603

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.

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

Faculty of Business

Textbook

References

BC605 Investment Management
Prerequisites: no formal prerequisites are specified; candidates usually would have completed the first year of the course

Objectives
- 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, Queensland, Q.U.P., 1980

BC606 Current Developments in Corporate Finance

The unit represents a coverage of contemporary issues in the area of corporate finance. Issues are presented by experienced professionals working in the area thus it is very much a pragmatic unit.

The unit is conducted on a seminar basis with ample opportunity given for interaction with the visiting speakers.

Because of the nature of the unit issues considered vary from year to year but the following list indicates topics recently covered:
- borrowing off-shore;
- rating commercial paper;
- foreign exchange management;
- equity raising;
- take-over activity;
- taxation implications for financing;
- regulation;
- competitive advantage;
- financing techniques.

References
A selection of articles as detailed each session by the session leader.

BC607 Research Project
Prerequisites, usually students would have completed the first four units of the course before commencing the research project

Objectives
To enable students to apply the concepts and techniques studied during the course to a substantial practical problem in corporate finance.

Specifically, students are required to show they have the ability to define a corporate finance problem clearly, select and apply appropriate methodology to solve it and present a clear and concise written report on the work undertaken.

Course program
This unit is conducted over two semesters. While the work is carried out by students it is done to a set program under the supervision of staff.

Seminars are run at the beginning of the semester. They cover the following topics:
- the objectives of the research project;
- the selection of an appropriate project;
- the selection of suitable methodology for different types of projects;
- organisation and standard of report expected.
Written proposals for projects are submitted by 31 March. These must include sufficient details for staff to assess the usefulness and feasibility of a project. Proposals are then approved and supervisors appointed as soon as possible after submission, but in any case not later than 30 April. Students are required to report on at least a monthly basis to supervisors and to submit drafts of all work undertaken prior to the presentation of the final written report which must be presented for assessment by 31 October.

References
No specific references are required for a unit of this nature. General references on report writing will be used, such as:

BC611 Advanced Taxation
Prerequisite: BC561 Taxation
This unit is an elective offered as one of two to complete the graduate diploma course in accounting (Professional Year Higher Degree Program).
The course studies income splitting, investment tax shelters, finance and international tax.

References
Journal articles

BC612 Forecasting and the Planning Process
Forecasting and the Planning Process provides a capstone to the graduate diploma course in market forecasting.
The unit deals with the issues of Strategic Management and, in particular, with the steps an organisation should take to work out its future direction. Incorporated as a main part of the unit are the development of Management Information Systems as well as functional implementation plans.

Framework
- strategic management;
- corporate objectives;
- resource analysis;
- scenarios, a Way of influencing future environments;
- strategy formulation;
- management information systems;
- action plans;
- application development tools;
- security and control.

Textbook

Reference

BE603 International Finance and Monetary Theory
Prerequisite, BE503 Financial Institutions and Markets should be completed or undertaken concurrently.

Objectives
To introduce students to the structure and workings of international financial centres and markets and to provide a study of issues relating to international monetary theory and international financial management.

Course outline
The following list should be taken as a guide only:
- Balance of payments
- Structure of accounts
- Australian perspective
- Adjustment theories
The international financial system
- Description of events since 1945
- Current outlook and problems
Review of international financial centres and markets
- Origins and development
- Outlook for international money markets

Exchange rates
- Foreign exchange dealings and controls
- Theories of exchange rate determination
International trade finance
Borrowing from overseas
- Sources of overseas borrowings
- Foreign currency exposure
International managerial finance
- Corporations management of assets and capital structures

References

BH602 Managing Conflict and Change in Organisations
A second-year subject in the graduate diploma course in organisation behaviour.
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 organisations in terms of its culture and assess, given that culture, how conflict and change might be more effectively managed. The unit is tightly sequenced with the following unit Management and Leadership.

Textbooks and References
It is unlikely that a specific text will be prescribed. Participants will be given extensive handouts and these will be used as a basis for class discussion and accompanying experiential activities.

BH603 Management and Leadership in Organisations
Four hours per week for one semester
A second-year subject in the graduate diploma course in organisation behaviour.
This subject has two specific points of focus:
1. Research Methods
2. Leadership
In the first section it is assumed that leaders need to have a basic understanding of research methods as studies of a quantitative or qualitative nature are frequently carried out within organisations. Participants are required to analyse an organisation and to formulate - fundamental research questions and choose an appropriate methodology to answer these questions. In addition leaders need a sound conceptual framework for their leadership and appropriate skills. In the second section participants will explore such issues as:
- Leaders as culture builders
- Leaders, conflict and change
- Leaders as symbols
- Leaders as managers of meaning
- Leaders and Human Relations
- Leaders and Group Development

Textbooks
In the main participants will use handout material for both class discussion and experiential activities. Beyond this they will be directed to a broad spectrum of references.

BH604 Management, Organisation and People
This unit is taken in the course for the graduate diplomas in accounting and management systems.
The course provides a macro-view of organisations as open systems examining the interfaces and interactions of environment, tasks, technology, structure and people. It then focuses on the psycho-social subsystem, studying individual, interpersonal, group and inter-group processes within the organisational context. The role of the manager in each of these contexts is a recurring and integrating theme. In particular, wherever possible learning is applied to the business and management systems environments immediately relevant to students. They have the opportunity to contribute by sharing their current and past work experience as a source of material to enrich class activities. Experiential learning methods as well as lecture-discussion and case methods are employed.
Considerable supplementary reading is required outside class time. Assessment is progressive and may include essays, case studies and class presentations.

Topics are chosen from the nature of the organisation; the organisation as an open system; 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; individual, leadership motivation, behaviour change and modification; perception; learning; value; personality and individual differences; personal values and science views.

Students are continually encouraged to analyse newly-acquired knowledge to facilitate transfer of their own work situation.

References

BH605 Managing Human Processes
Prerequisite, BH501 Administration of Organisational Systems.

A unit in the graduate diploma course in business administration.

Structure
The contribution of the behavioural sciences in solving the ‘people’ problems of management are studied so that the student will be better able to interpret psycho-social aspects of organisations, and be equipped for the successful management of people.

The student is introduced to the role of organisation theorists on organisational thinking and the relationship between organisation and organisational development;
the student is able to use concepts to manage people;
the student develops skills in communication, assertiveness and self-knowledge are subsidiary aims.

After the course, the candidates will have developed increased awareness of human organisational problems and of the impact their personal behaviour has on others.

Class sessions may draw upon lecture-discussions, group exercises, case studies, student presentations and films.

These are complemented by extensive private reading and practical assignments out of class.

Textbooks and references
Details provided at the first session.

BM602 Strategic Management
Prerequisite, BH601 Administration of Organisational Systems

BM601 Marketing Management 2
Prerequisites, BM501 Marketing Management 1, BQ501 Quantitative Methods, BE501 Economics

A second-year subject in the Graduate Diploma in Business Administration.

This unit builds on the knowledge that students have gained from Marketing Management 1, especially in respect to the marketing concept, the marketing planning process and the elements of the marketing mix.

The aim of this unit is to:

introduce the student to the fundamental of marketing research;
identify the value of additional information and how this information can be used;
develop basic skills in services marketing;
introduce candidates to the practical and theoretical issues of international marketing;
involve the student in practical issues through the use of case studies, assignments and group presentations.

Method of instruction
Particular emphasis is placed upon the use of case studies to complement the lecture material. Students are expected to participate actively throughout the semester, and are required to present both individual and group assignments.

Course framework
The main topics include:

— marketing research: costs and benefits, marketing research strategy, evaluation of results;
— services marketing: key points of differences as against product marketing, how to classify services in terms of marketing strategy development, marketing for the professions;
— international/business.

Textbooks
Nil.

References
Topic reference will be given in class for the specific marketing applications covered.

BM602 Strategic Management
Prerequisite, nil.

A fourth semester subject in the graduate diploma in management systems.

Objective

The unit provides students with a range of the management problems involved in developing strategies for organisations in both the public and private sectors.

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 unit, Business Policy is taken in the final semester of the course.

Candidates must have completed all of Group A units and two of the Group B units before commencing this course

Course
Within the philosophies discussed in all other units, students are required to incorporate behavioural, economic, financial and marketing concepts and demonstrate that they have a clear understanding of administration. The unit provides an opportunity to improve capacity to identify, analyse and evaluate strategic business problems and opportunities.

Framework
Introduction. Business policy as a field of study; the managing director’s job; as organisation leader, personal leader, architect of corporate purpose.


Implementing corporate strategy. The accomplishment of purpose.

References
BM604 Data Collection Methods and Applications

Objective
This unit seeks to explore the options available in the collection and application of data and survey method. The unit also aims to provide a working knowledge of practical research methods. The nature and role of social and marketing research as an aid in business forecasting and management decision-making is examined, with attention being paid to the ethics and standards which must be observed in carrying out research projects.

Research design including cost/benefit analysis and the various qualitative and quantitative data collection methods are studied, together with survey sampling techniques. Important also is an overview of sources - surveys. In addition to data collection methods, for ex. using SPSSX at appropriate statistical tools are provided as well as the reporting and presentation of survey results.

References
Details will be provided at the first session.

BQ601 Financial Modelling

The aim of this unit is to enable students to appreciate, and gain practice in the application of, a range of computer based analysis methods as components of a decision support system. Throughout the unit, extensive use will be made of computer packages and particular emphasis will be given to current developments in computing that relate to finance and financial management.

Topic coverage includes:
- Decision support systems, micro-computers and current software developments, financial modelling using languages (e.g. FORESIGHT) and spreadsheets (e.g. LOTUS 1-2-3), graphics, data base systems, public data bases, approaches to risk analysis, simulation methods, evaluation and selection of computing systems.

References
Software documentation, user manuals and current journal articles will provide the major reference material for the unit. In addition the following texts will be used:

BQ602 Business Forecasting 2

Prerequisite: BQ603 Business Forecasting 1

Business Forecasting 2 concentrates on the area of causal forecasting and commences by introducing the techniques of simple and multiple regression. The development of hypotheses, establishment of appropriate models and their subsequent estimation is considered in the context of a number of case studies, centred on forecasting market shares and demand at varying levels of aggregation. Additionally, some of the common pitfalls associated with this type of investigation are illustrated and some of the pitfalls producing incorrect forecasts per se are also dealt with.

Course participants are also introduced to structural and input-output models from a users point of view. Aaain considerable use will be made of data bases and computer packages.

Textbook
Makridakis, S., Wheelwright, SC., and McGee, VC. Forecasting Methods and Applications. 2nd edn. New York: John Wiley and Sons, 1983

References
- Other reference books plus selected journal articles will be suggested at appropriate stages in the course.

BQ603 Business Forecasting 3

Prerequisite: BQ602 Business Forecasting 2

There are two main areas considered in this section of the course: the use of Markovian and Demographic methods of forecasting.

Markovian model: a examined in the context of areas such as branch switching, market share forecasting and for modelling social processes and obtaining forecasts.

Demographic analysis techniques will be utilised to describe forecast events such as births, deaths, migration, entry or exit from school or the labour force, together with other important socio-economic and sociological processes.

References

BT601 Systems Project Management

Course objectives
After completing this unit, students should be able to:
- understand the main reasons for success or failure of data processing projects;
- co-ordinate the skills of a systems development team, users and operators;
- evaluate both the feasibility of suggested projects and the viability of suggested solutions;
- appreciate the problems and principles of project planning and control;
- plan and control the implementation of new systems.

Course structure
Topics covered include:
- project teams and their behavioural development
- project leadership
- project planning and control
- project administration
- progress and quality reviews
- systems development productivity techniques
- the implications of changing systems
- implementation of systems projects

No formal prerequisites are specified. However, it will be assumed that candidates have a prior knowledge of the system development process equivalent to that gained from completing BT503 Software Engineering Strategies.

Preliminary reading
Brooks, F.P. The Mythical Man-Month. Reading, Massachusetts: Addison-Wesley, 1975

References

BT602 Information Systems Management

Course objectives
At the completion of this unit, the student should be able to:
- specify the organisation and operation of a modern information systems division in terms of its functional units;
- define and use performance criteria for the information systems function;
- introduce and control new developments in information technology in the organisation;
- negotiate the acquisition of new hardware and software;
- hire, fire, control, support and develop information systems staff;
- implement tools and methods for the more efficient operation of the information systems function.

No formal prerequisites are specified. However, it is assumed that candidates have a prior knowledge of administrative theory and practice and of computer systems.
BT603 Management Systems

Course objectives
This unit covers the theory of management information systems and the application for decision-making in organisations. The student should be able to:
- identify the decision requirements for the management of an organisation;
- analyse an information-gathering and processing system intended to facilitate decision-making and long-range planning;
- measure the effectiveness of an organisation's decision support system;
- develop systems for the management of knowledge work;
- evaluate the social implications and technical feasibility of an information system.

Candidates usually take this unit in the final semester of the Graduate Diploma in Management Systems.

Course structure
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
No single book covers the full scope of the course. The texts to be used as references will include:
- Date, C.J. An Introduction to Database Systems. 4th edn. Reading, Massachusetts: Addison-Wesley, 1986

BT606 Data Base Management Strategies

Prerequisites, BT606 Information Analysis and BT507 Computer Programming

Unit objectives
By the end of this unit the student will be able to:
- implement a logical database design in a selection of DBMSs;
- design and program transactions against the data base;
- include appropriate security, integrity and recovery functions in the above.

Topics
This unit builds upon the logical database design concepts taught in Information Analysis in covering the implementation considerations of a number of DBMSs. The students' acquaintance with SQL from that unit is also built upon the coverage of Relational Data Bases.

References
- Date, C.J. An Introduction to Database Systems. 4th edn, Reading, Massachusetts: Addison-Wesley, 1986
- Kroenke, D. Database Processing, 3rd edn, Chicago: SRA, 1988

BT607 Data Communications and Office Automation

Prerequisite, BT507 Computer Programming

Unit objectives
At the completion of this unit, students should be able to:
- understand the concepts and terminologies used in the office automation and data communication networks;
- demonstrate an understanding of the various technologies used within the electronic office;
- explain how the various office technologies such as V.OICE, TEXT, IMAGE and DATA processing enhance the productivity of office support staff and knowledge workers;
- explain the need for INTEGRATION of office technologies and information systems throughout the use of data communication networks;
- demonstrate sound knowledge of the basic concepts and components of office automation and data communications;
- understand the need for careful analysis, risk assessment and control procedures suitable for different system development approaches;
- describe the methodologies in use in organisations and 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 maximized.

Topics covered include:
- information systems theory;
- decision support systems;
- traditional life cycle development;
- problems with traditional life cycle development;
- application packages;
- the user interface;
- user driven computing;
- fourth generation languages;
- prototyping;
- Computer-Aided Software Engineering (CASE) tools;
- participative design;
- information systems issues for management.

Textbook

References
BT609 Knowledge Based Systems
Prerequisites: BT506 Information Analysis

In this unit, the student develops an understanding of the nature and uses of expert systems in business. The unit involves practical work using a variety of expert systems shells.

Topics covered include:
- what expert systems are, how they are developed and who is using them;
- how expert systems differ from conventional database programs, laboratory artificial intelligence programs in particular, and human beings who perform tasks expertly;
- basic concepts of artificial intelligence and knowledge engineering that affect design and implementation;
- architectural choices faced in building expert systems, including specific design prescriptions for tasks of different kinds;
- evolutionary process of knowledge acquisition needed to put expertise into a machine;
- comparative strengths and weaknesses of existing knowledge engineering tools;
- the pitfalls and opportunities that arise from the important need to evaluate artificial expertise.

References

BH701 Career and Life Planning
Participants examine, via reflection, discussion and theory, their personal development and life stage as a basis for considering the concept of career development and its implications for management.

References

BH702 Power and Politics in Organisations
Explores the connections between controlling, organisation and influence, by introducing various conceptions of personal, organisational and institutional power, the struggle for power and authority, and politics. Participants investigate the links between their own beliefs and organisational experience.

References

BH703 Research in Organisation Behaviour
By attempting to answer the question “what is research” and “what is the purpose of research”, participants explore the assumptions underlying various types of research. The development of appropriate research skills through “hands-on” experience forms the balance of the subject.

References

BH704 Current Issues in Organisation Behaviour
A topical focus designed to reflect the current and emerging interests of participants, staff, visiting faculty and pertinent organisations. Topics such as total quality control, cultural change, inter-organisational relations, strategic planning and gender issues might provide a guide to this course.

References
To be assigned as appropriate to the shifting forms of the subject.

BH705 Management of Strategic Change
Prerequisites
Completion of the Graduate Diploma in Management Systems or equivalent.

Objectives
To develop ways of understanding factors to implement change (especially strategic) effectively within an organisation.

To analyze the implications of change, the complexities and ambiguities associated, and the 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 organisational change, the impact of external automation, and the effect of human and structural consequences.

Syllabus
Topics will include:


- The relationship with Users. Stabilisation of Change.

Textbooks

BQ701 Business Forecasting
Prerequisites
Completion of the Graduate Diploma in Management Systems or equivalent.

Objectives
(i) Identify the appropriate approach to adopt for a forecasting problem (e.g., differentiate between the approaches of predictive, causal and more importantly for users and workers in the field of technology). Specifically Technological Forecasting.
(ii) Choose the appropriate forecasting method (e.g., multiple regression analysis) for selected situations, choose the appropriate approach for the problem and be aware of the caveats associated with that choice.
(iii) Be able to carry out a full scale forecasting exercise and then, through the medium of a management report, communicate the findings to the appropriate people.

References

BQ702 Computer Aided Management
Prerequisites
Completion of the Graduate Diploma in Management Systems or equivalent.

Objectives
(i) Develop skills and knowledge in identifying and modelling real world problems in different areas of management.
(ii) Introduce relevant computer techniques relevant to management problems.
(iii) Enable students to apply these techniques to realistic problems with focus on business operations, planning and control. Emphasis will be on the interpretation and impact of the solutions.
BT801 Project and Thesis

Prerequisite
Graduate Diploma in Management Systems or equivalent.

Requirements
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. The examiners will be external to the De, and should be external to the Institute. 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 each semester (open also to the public, interested persons with specific questions to employeys). Final year students will present the salient results of their project.

The duration of the project will be equivalent to four units of the Masters Degree. The Project will be normally taken in the final year of the course. Prior to commencing their project, students shall undertake a short course of study in research concepts and methodologies. As a guide, the following may be examples of topics appropriate for research:

- Performance and implementation issues in database crash recovery;
- Evaluation of information system planning and its relationship to information systems performance;
- A systems model for improving human factors of computer environments;
- A strategic planning methodology for a management information system;
- Designing dependable information systems in a commercial environment;
- Attitudes of office personnel towards advanced office technology;
- Expert systems for design problem solving;
- Decision support systems using expert system techniques;
- Organisational structures to support end-user computing.

BH801 Organisation Research Project

Participants are required to write, under supervision, a minor thesis which focuses on some aspect of behaviour in organisations. Applied research is encouraged and emphasis is given to a clearly articulated mode of inquiry.

Faculty of Business

BT702 Knowledge Based Systems

Prerequisites
BT502 Current Issues in Systems Design or equivalent.

Objectives
(i) Discuss the position of expert systems in the world of artificial intelligence, and the objectives and development strategy of expert systems.
(ii) Explain the difference between conventional software and expert systems, including concepts such as plausible reasoning, reasoning under uncertainty, and the generation of explanations.
(iii) Recognise and analyse commercial problems to which expert systems may provide a solution.
(iv) Select the appropriate tools to apply to a commercial problem from a range including object oriented languages (e.g.: LISP, PROLOG), microcomputer based expert system shells (e.g.: VP, Expert-Guru), mainframe based expert system shells (e.g.: IBM’s ESE, Cullinet’s Application Expert), or expert system languages (e.g.: ESP’s XL).
(v) Discuss strategies of supervising the development of expert systems.

Syllabus
(a) The relationship between AI and expert systems. The relevance of expert systems to business.
(b) Expert systems:
(i) knowledge acquisition;
(ii) architectures,
(c) The range of tools available to build expert systems.
(d) The selection of suitable problems for expert systems solutions.
(e) Managing expert systems development.
(f) Development areas, e.g., natural language networks.

References
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Please note:
1. Major course changes to the Bachelor of Engineering courses were due for consideration in 1989, details of which could not be included at the time of preparation of copy for this Handbook. Details of revised courses may be obtained from the appropriate department or the Engineering Faculty Office.
2. The Faculty of Engineering, during 1989, was undergoing restructuring into a series of Schools. Details were not available at the time of preparation of this Handbook. For further information please contact the Engineering Faculty Office.

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Graduate Diploma in Civil Engineering Construction
* Diploma of Building Surveying

Department of Electrical and Electronic Engineering
Degree of Master of Engineering, by research
Degree of Master of Engineering (Information Technology), by coursework
*Degree of Bachelor of Engineering (Electrical and Electronic and Computer Systems)
*Degree of Bachelor of Engineering (Electrical and Electronic and Computer Systems)/Graduate Diploma in Management
Degree of Bachelor of Technology
Degree of Bachelor of Technology/Graduate Diploma in Management
Graduate Diploma in Computer Systems Engineering
Graduate Diploma in Telecommunication Systems Management

Department of Manufacturing Engineering
Degree of Master of Engineering, by research
Degree of Master of Engineering (Computer Integrated Manufacturing), by coursework
*Degree of Bachelor of Engineering (Manufacturing)
*Degree of Bachelor of Engineering (Manufacturing)/Graduate Diploma in Management
Degree of Bachelor of Technology
Degree of Bachelor of Technology/Graduate Diploma in Management
Graduate Diploma in CAD/CAM
Graduate Diploma in Chemical Engineering
Graduate Diploma in Management
Graduate Diploma in Manufacturing Technology

Department of Mechanical Engineering
Degree of Master of Engineering, by research
*Degree of Bachelor of Engineering (Mechanical)
*Degree of Bachelor of Engineering (Mechanical)/Graduate Diploma in Management
Degree of Bachelor of Technology
Degree of Bachelor of Technology/Graduate Diploma in Management
Graduate Diploma in Air-conditioning
Graduate Diploma in Risk Management
Graduate Diploma in Maintenance Engineering

For details of these courses see sections for the above departments.

*Combined courses.

Feeder courses
The Faculty of Engineering has an arrangement with the Tasmanian State Institute of Technology which enables students to undertake part of a Swinburne engineering degree course at Launceston. The equivalent of the first two years of the courses in civil, manufacturing and mechanical engineering and the first year of the electrical and electronic course are currently available at Launceston.

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 Launceston to undertake the two six-month industrial experience components of their course in Tasmania.

Women in Engineering
Women are still a minority in engineering courses and the workforce. The Faculty of Engineering actively encourages women to choose engineering as their career and provides them with opportunities to form networks with other female students within the course and female practising engineers.

Many women who become engineers enjoy the variety of career opportunities that engineering opens to them and aspects of the work that all engineers share, such as:

— applying science to solve problems;
— working with people;
— helping meet society’s needs, such as energy usage; and
— environmental issues;
— designing and creating solutions, such as with manufactured products, structures and community services.

The alternative entry scheme (described under Admission to first year degree courses) allows students who have not chosen the standard maths/science prerequisites in Year 12 to review their career decisions and to enter engineering by undertaking a more intensive program of maths and science in the first-year of their degree program. Women who would like further information about the engineering degree program and career opportunities should contact Pam Roberts, Sub-Dean, on 819 8510.

Cooperative and Continuing Education in the Faculty of Engineering
Manager, Cooperative and Continuing Education
S.H. Salem, CMfgE, MEng(Vic), BScEng(Ains), DipEd(Haw), MIEAust, SME, AIMM.

Administrative Officers
A. Roubin
H. Giouris

Cooperative Education
"One must learn by doing the thing; for though you think you know it you have no certainty until you try."— Sophocles
Cooperative Education 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.

General

A feature of undergraduate courses offered in the Faculty of Engineering is their cooperative education format. These courses include components of paid industrial experience which form an integral part of the education program.

Cooperative program

Undergraduate courses offered as cooperative education programs are the degree courses in civil, electrical and electronic, computer systems, manufacturing and mechanical engineering and the diploma course in building surveying. Students are required to complete twelve months (two semesters) of approved industrial experience before becoming eligible for the award of an engineering degree. Six months (one semester) of approved industrial experience is required for the award of a building surveying diploma.

Benefits

Students who undertake a cooperative education 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 industrial experience);
- students work with professionals on real industrial problems;
- students are able to sample particular areas of the chosen branch of their profession before graduation;
- students graduate mid-year when employment opportunities are more readily available;
- industrial experience gained during the course is an advantage when graduates are seeking their first jobs.

Placement of students

The Faculty of Engineering is committed to the task of finding industrial experience jobs for students in cooperative courses. Students may take initiatives to secure their own job placements but before contacting a prospective employer a student must contact the cooperative education section of the faculty, to determine whether the faculty has made an approach to the employer concerned.

Where all reasonable effort to find a job has been made by both faculty and students, but no placement has been found, the student may apply to his/her head of department to reschedule the industrial experience components of the course.

Students without permanent residence status should be aware that while the faculty will assist them in finding an industrial placement, it is frequently impossible to find local employment for students in this category. These students are advised to seek placement in their home country and the faculty will provide information on academic institutions who are able to provide supervision.

Supervision

While in industrial experience students are supervised by their employers and a member of the faculty’s academic staff who acts as the student’s industrial tutor.

Cooperative employers of Swinburne engineering students

The following are, or have been recently associated with courses in civil, electrical and electronic, manufacturing and mechanical engineering:

- Alcoa of Australia Ltd
- AMP
- APM Ltd
- Arlec Electronics
- ASEA Pty Ltd
- Australian Iron & Steel Pty Ltd
- Australian Portland Cement Ltd
- Automation Dynamics
- W.E. Bassett and Partners
- BHP (Coated Products Division)
- BHP (Slab & Plate Product Division)
- Burns Bridge Australia Pty Ltd
- Caterpillar of Australia
- CID Ltd
- CITRA Constructions Ltd
- City of Box Hill
- Brighten
- Caulfield
- Croydon
- Doncaster & Templestowe
- Essendon
- Footscray
- Hawthorn
- Keilor
- Launceston, Tasmania
- Melbourne
- Mortdale
- Nunawading
- Oakleigh
- Prahran
- South Melbourne
- St. Kilda
- Waverley
- Werribee
- Cemalco Research
- Containers Packaging
- Control Data Pty Ltd
- Cooldrive Industries
- Costain Australia Ltd
- CPE Australia
- CSIRO
- CSR Gyprock
- Dandenong Valley Authority
- Datacraft Pty Ltd
- Department of Housing, Tasmania
- Dorf Industries Pty Ltd
- Dow Chemical Australia Ltd
- Dunlop, Australia Ltd
- Eaton Pty Ltd
- Enertronics Pty Ltd
- Fastron Pty Ltd
- J. Gadsden Engineering Pty Ltd
- Garlick & Stewart
- Gas & Fuel Corporation of Victoria
- Government Aircraft Factory
- Hadwen Engineering Pty Ltd
- Heil, Australia Pty Ltd
- Henry & Walker Pty Ltd, Darwin
- Hoechst Australia Ltd
- Holden’s Engine & Components Company
- Holtproof Ltd
- IBM
- ICI Australia Ltd
- Irwin Johnston & Partners Engineers Pty Ltd
- John Connell & Associates
- John Holland (Constructions) Pty Ltd

Faculty of Engineering
Overseas placement

The faculty, co-operates with the following universities in organising overseas placements:

- Drexel University, Philadelphia, Pennsylvania
- University of Surrey, Guildford, England
- Northeastern University, Boston, Massachusetts, USA
- University of Cincinnati, USA
- Lawrence Institute of Technology, USA

Cooperative graduates offer employers a competitive edge

Swinburne Institute’s cooperative education programs place students out in industry, in paid work, where they get the opportunity to look at the realities of their chosen career paths. Therefore, when they graduate, they join the employer with the advantage of having had one year of structured work experience.

This means:
- they are results oriented;
- 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 alert to the ‘bottom line’ advantages will also be interested in these further benefits:
- by employing a cooperative student for his/her training, the employer can evaluate a potential graduate’s suitability to the organisation;
- regular and long-term contact between employers and faculty staff has a beneficial influence on course design and teaching methods;
- the student promotes the image of the employer’s organisation at Swinburne.

Cooperative graduates bring with them:
- a realistic attitude to work;
- access to professional specialised faculty staff;
- access to Swinburne’s high technology facilities including computer links to international information banks.

For further information, contact Mr. S.H. Salem, telephone 819 8168.

Advice to prospective students

First-year engineering degree

Secondary students considering a professional engineering course in civil, electrical and electronic, computer systems, manufacturing or mechanical engineering, 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 defer making a final decision on the branch of engineering to be undertaken until the end of first year.

The subjects comprising first year are intended to form a firm foundation on which studies in later years are built. Considerable emphasis is placed on the development of fundamental scientific principles and an introduction to engineering technology and techniques.

Another feature of all degree courses is their four-and-a-half (nine-semester) year cooperative education format. The program consists of seven semesters of academic tuition in the sections pertaining to the various departments of the Engineering Faculty.
Second and later years engineering degree
Students who have completed, or partly completed, an engineering course at another tertiary institution may apply for entry to an engineering degree course at Swinburne. Applications in this category are essentially considered on the basis of the course studied by the applicant and the results obtained. Enquiries should be directed to the head of the engineering department concerned.

The policy of the Engineering Faculty Board regarding admission with advanced standing is stated in the section entitled 'Admission with advanced standing'.

Diploma of Building Surveying
Secondary students planning to enter the Diploma of Building Surveying should bear in mind the necessity for studies in mathematics and the physical sciences. Eligible applicants should have successfully completed a Year 12 course of study with a branch of mathematics as a prerequisite subject. Recommended Year 12 subjects are physics and/or chemistry. Students who have completed a Certificate of Technology course in an appropriate area will be admitted with some exemptions, as appropriate.

Admission to first-year degree courses
Selection
Applications for first-year are considered by the Engineering Faculty Selection Officer. Selection is based primarily on academic merit as assessed by results achieved in Year 12 subjects, or their equivalent. The Selection Officer may also take into account other factors such as:
1. the results of any subsequent tests or examinations attempted. For example, some applicants may be invited to undertake a test such as the Australian Scholastic Aptitude Test, prepared by the Australian Council for Educational Research;
2. information obtained from any interviews that the Selection Officer may arrange.

Eligibility to apply for entry
'Standard' entry
VCE(HSC)
A course of study previously accredited by the Victorian Curriculum & Assessment Board at Year 12 level in the following Group 1 subjects: English, Mathematics A, Mathematics B, Physics. Results of Grade D are required. Group 2, STC, T12 and other Approved Study Structures are not normally taken into account.

VCE(TOP)
A course of study is considered on the basis of an equivalent course of study to the Year 12 subjects listed above. Persons who complete satisfactorily, the science/engineering VCE(TOP) course at Swinburne College of TAFE by passing all of the following subjects are given guaranteed entry: English, Physics, Chemistry, Mathematics (Science) and Concepts of Mathematics.

Alternative entry schemes
VCE alternative entry
Satisfactory completion of VCE(HSC) or VCE(TOP) including a pass in a branch of mathematics as a prerequisite subject plus passes in mathematics and science subjects in Year 11. You may be required to present for an interview. Classes commence two weeks earlier than those selected under regular entry conditions and students receive extra attention in mathematics, physics and/or chemistry as appropriate. Additional weeks of tuition will be provided during the year.

Certificate of Technology
(a) For full-time degree study
Satisfactory completion of a Certificate of Technology in an engineering field. You may be required to present for an interview. Students will undertake classes with the students selected under the VCE alternative 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.

(b) For part-time degree study
Satisfactory completion of a Certificate of Technology in an engineering field including certificate Mathematics level 3 or additional satisfactory completion of HSC(VCE or TOP) Mathematics A and Physics (or equivalent).

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, it is preferable that you have successfully completed VCE(HSC or TOP) Mathematics A and Physics (or equivalent). Full-time degree students will undertake classes with the students selected under the VCE alternative entry scheme. There is no specific age limit for mature age in the Faculty of Engineering, but this category is not intended for persons who have recently completed their secondary schooling.

Other
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. The Faculty will notify applicants if they are required to undertake such a test.

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
With the exception of applicants seeking alternative VCE, mature-age or other alternative types of entry, 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 1990 entry is 15 September, 1989.

Part-time
All engineering courses can be completed on a part-time basis. 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 819 8444.

Deferment
Applicants offered a place in first year for 1990 may apply for deferment until 1991. Applications for deferment should be made in writing and directed to the Assistant Registrar (Engineering).

Deferment will be virtually automatic for those who apply as soon as the offer of a place is made. Later applicants may be asked to give reasons for their request for deferment. Applicants who are granted a deferment will be notified in writing by the Assistant Registrar (Engineering).

If a person who has been granted a deferment undertakes a course in another faculty or another college or university, the offer of a reserved place will lapse.
Admission to second and later years
Applicants seeking a place in second or later years of an engineering course as either full-time or part-time students must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of January in the year of application. Overseas students must also contact the Australian diplomatic post in their country to make the appropriate visa applications.

Admission to graduate diploma and masters by coursework courses
Graduate diploma and masters by coursework courses in a range of specialist areas of importance to engineers are available. The usual entry requirements are completion of a degree or diploma in a field of engineering or applied science. Applicants for these courses must apply directly to Swinburne. Application forms are available from the Information Office, telephone 819 8444. The closing date for applications is usually the middle of January in the year of application.

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 Registrar. Enquiries regarding Masters’ programs by coursework should be directed to the appropriate department in the first instance.

Admission with advanced standing
A student who has successfully completed, or partly completed, an acceptable post-secondary course may be admitted with advanced standing to an engineering course at Swinburne. The policy of the Engineering Faculty Board with regard to admission with advanced standing is set out in the following regulations:

1 General
1.1 The Faculty Board believes that in general students who have completed satisfactorily, part of an engineering course at another tertiary institution in Victoria, or another comparable course, should receive credits for an equivalent part of the course for which they are enrolled at Swinburne.

1.2 In the consideration of applications for credit the following principles will be applied by the Board:
(a) A student should be brought on to a standard course as soon as possible after entry into the Institute.
(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 graduate diploma courses offered by the Faculty of Engineering, a student must complete at least sixty per cent of the prescribed total course time for that particular course at Swinburne.

2 Application
2.1 In applying this policy the Board will follow these guidelines:
(a) Except in extraordinary circumstances credits are only approved at the beginning of a course of study.
(b) Credits are to apply only to a specified course of study at the Institute.
(c) A credit shall be valid for a particular course and syllabus and only for the duration of such course or syllabus.
(d) In order to qualify for an award in the Faculty of Engineering a student must complete as a minimum, an equivalent full-time year in the Faculty.

2.2 In order to request credit, students entering a course will be required to do as follows:
(a) Register their intention to seek admission with advanced standing at the time of first enrolment.
(b) Lodge supporting documentation with their department within six months of registering their intention.

Course requirements
Class timetables
The syllabus for each of the engineering courses may be found in the separate sections pertaining to the various departments of the Engineering Faculty. Provisional timetables for all years of engineering courses will be displayed at enrolment. Students should note that these timetables are provisional only and may be changed depending on staff and facilities available. Where it is necessary to change a timetable, details will be posted on the faculty or departmental notice-board, as appropriate.

Many subjects are offered as part-time evening classes. Enquiries regarding subjects available on a part-time basis should be directed to the head of the relevant department.

Practical work
Practical work forms a significant part of most subjects offered by the Engineering Faculty.

Students are expected to attend all practical work sessions (for example, laboratory work, drawing office and field work, excursions and site visits) and to complete all the practical work assignments set by the lecturers responsible for a particular subject. Assignments not submitted by the due dates may fail to count as practical work completed.

Students should approach their lecturers to find out the details of practical work requirements in each subject.

Electives
Engineering degree courses (1985 syllabus) include a number of elective areas of study. Students should note that the range of electives offered in any one year depends on the number of students wishing to undertake a particular elective and on the staff and facilities available.

(a) All degree courses include provision for two general elective subjects in a non-scientific/technical area to be taken in later years. General electives of forty-five hours each are chosen from nominated Liberal Studies subjects or other approved subjects from the Faculties of Arts or Business.
A list of approved subjects will be published at the start of each year. The subjects available in 1989 were:

- AB752  Applied Psychology
- AB753  Literature and Media
- AB754  Sociology
- AB755  Law in Society
- AB756  Technology and Society
- AB757  Archaeology
- AB758  Philosophy
- BS501  Accounting and Finance
- BS502  Legal Studies
- BS503  Managerial Economics (not available for Mechanical Engineering students)
- BS504  Contemporary Macroeconomics

Students must have the approval of the head of their department before enrolling for the subject in question. Students must ensure that the subject chosen will fit into their timetable without difficulty.

The two general elective subjects are compulsory for all degree students.

(b) In later years of all courses elective subjects are available which enable students to achieve some measure of specialisation in their chosen branch of engineering. See the appropriate engineering department section for further details.

Examinations and assessment

Various methods are used to measure student performance in subjects offered by the Engineering Faculty. These methods include the use of formal examinations; tests held during, or at the end of, each semester; project work; assignments; laboratory exercises, etc. A statement setting out the assessment and workload requirement for each subject is issued to students early in each semester. To assist students in determining their complete workload in any one semester, each engineering department maintains a record of the overall program for students in each year group of a full-time course. The work program is displayed in the engineering department concerned.

Students are automatically entered as candidates for all fully check their statement of enrolment which is posted to them approximately four weeks after the commencement of the semester.

Students enrolled in subjects spread over both semesters, for example, most subjects in common first-year engineering degree, should note that mid-year results reports are displayed on faculty and departmental 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 the semester.

For 1985 syllabus degree courses with the exception of final year, the duration of each academic semester will be eighteen weeks which includes, subject to approved variations:

(a) fifteen weeks of teaching;
(b) a non-teaching week in the sixteenth week for revision or reflection; and
(c) formal test/examinations in the seventeenth and eighteenth weeks.

The specific weeks devoted to these activities in 1990 are given in the Swinburne calendar in the front of this Handbook. For each subject the total time for formal tests or examinations per semester will be no longer than 1115 hours of the formal contact time per semester. (Students should also refer to the section entitled 'Regulations concerning assessment' in the general section of this Handbook.)

Faculty of Engineering

Faculty passing scheme

The revised regulations on passing by years (faculty passing scheme) are set out below. These regulations apply to courses of study undertaken from first semester 1984.

1 General

The Faculty of Engineering operates a faculty passing scheme which applies to:

(a) full-time undergraduate and graduate diploma students;
(b) part-time undergraduate and graduate diploma students whose weekly workload is ten or more contact hours.

A part-time student is one enrolled for subjects which require a total class, tutorial and/or laboratory contact time of less than 75% of the full-time course load.

Students who have a full-time workload but who are not pursuing the course prescribed in the Handbook for the particular year, must have this course approved by the head of department concerned before becoming eligible for consideration under the faculty passing scheme.

2 Part-time students

(a) Part-time students who qualify and enter for a Faculty Pass for a group of subjects will receive a Faculty Pass result for that group and will not be required to undertake further study for subjects in the group. Results for individual subjects, however, will be unchanged. Thus, a part-time student who fails a subject but achieves a Faculty Pass for the group which includes that subject will have a fail recorded for the subject but will satisfy the course requirements for the subject.

(b) Part-time students may be admitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

3 Full-time students

The faculty passing scheme operates for full-time students as follows:

(a) A student in any year will normally be assessed on the whole of the year's work at the end of the second semester. A student will:
(i) pass the year by passing in all subjects (a pass outright); or
(ii) be passed by Faculty Board on the year as a whole (that is, be granted a 'Faculty Pass' on the year; or
(iii) not pass but be permitted by Faculty Board to repeat the year's work as a full-time student; or
(iv) not pass and be suspended from the full-time course (see paragraph 3 (b)).

(b) Students who achieve only limited success as full-time students and elect (and are permitted by Faculty Board) to enter part-time study in order to rehabilitate themselves, will be permitted to retain credit for any subjects passed as full-time students and may be readmitted by Faculty Board to full-time study at such time as they become capable of entering a full-time year (or semester where applicable) without any carry over of subjects from earlier years (or semesters where applicable).

(c) The achievement of a Faculty Pass will not alter results in individual subjects but will obviate the necessity to repeat subjects not passed in the group considered.

Note: The authority of Faculty Boards as set down in paragraphs 2(b) and 3(b) has been delegated to the head of the awarding department.
4 Special programs of study
Applicants with ‘advanced standing’ who are admitted to full-time studies may be enrolled in special programs of study as interim measures until they can be enrolled in the normal groups of subjects. The rules of faculty passing will apply. Such special programs require approval by the head of the awarding department.

5 Formula for faculty passing
(a) The following assessment categories are used by departments in preparing subject results for submission to the Board:
HD, D, C, P, P*, N*, N.
(b) The assessment categories of P* and N* are used in determining a student’s Faculty Result, but do not form part of a student’s published record of academic achievement. A result of P* is formally published as P; a result of N* is formally published as N.
P* — Marginal pass in the subject.
N* — Fail. In the opinion of the subject panel the student, having submitted required assessable work, is recommended for consideration for a Faculty Pass.
(c) A Faculty Result of Pass is awarded to eligible students (see paragraph 1) who pass all subjects in the year of study.
(d) An automatic Faculty Pass is awarded to a part-time student who meets both of the following criteria:
(i) Achieves a positive aggregate rating on the formula
\[ A = \sum n_i z_i - 5 \sum n_i \]
where A is aggregate rating, 
\( n_i \) is the number of hours per week in the ith subject, 
\( z_i \) is the rating in the ith subject.
A student’s rating in each subject is determined from the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>9</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
</tr>
<tr>
<td>N*</td>
<td>4</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
</tr>
</tbody>
</table>

(ii) Gains recommended results of N* in not more than two subjects for the subjects where the total number of hours is not more than 6 hours per week per semester.
It should be noted that results in industrial experience subjects are excluded when a student’s aggregate rating is calculated.
(e) An automatic Faculty Pass is awarded to a part-time student who meets both of the following criteria:
(i) Achieves a positive aggregate rating on the formula
\[ A = \sum n_i z_i - 5 \sum n_i \]
where A is aggregate rating, 
\( n_i \) is the number of hours per week in the subject, 
\( z_i \) is the rating in the subject.
(iii) Gains recommended result of N* in not more than one subject provided the number of hours in the subject is not more than 3 hours per week per semester.

6 Result categories and percentage scores
The relationship between result categories and normalised percentage scores is:

<table>
<thead>
<tr>
<th>Result category</th>
<th>Range of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>85% — 100%</td>
</tr>
<tr>
<td>D</td>
<td>75 — 84</td>
</tr>
<tr>
<td>C</td>
<td>65 — 74</td>
</tr>
<tr>
<td>P</td>
<td>50 — 64</td>
</tr>
<tr>
<td>N</td>
<td>0 — 49</td>
</tr>
</tbody>
</table>

It should be noted that the above table is used in determining result categories for all students enrolled in a subject irrespective of whether the students are eligible for a Faculty Result or not.

7 Supplementary assessment
At the discretion of the Board, a scheme of restricted supplementary assessment operates for students who have achieved poor results (below N*) in one or two subjects. In any such cases consideration of a student’s Faculty Result is deferred until the results of the supplementary assessments are available.

8 Faculty results
Students who have a workload which qualifies them for consideration under the faculty passing scheme are eligible for a Faculty Result. Eligible students are responsible for checking that their statement of enrolment makes provision for a Faculty Result. Codes currently in operation are:

Civil Engineering
FX982 First-year degree — full-time
FX982 First-year degree — part-time
FX984 Second-year degree
FX986 Third-year degree
FX988 Fourth-year degree
FX989 Fifth-year degree
FC991 Part-time degree — later years (for students enrolled in full-yearsemester 2 subjects)
FC992 Part-time degree — later years (full yearsemester 2 subjects)
FC892 Building Surveying Diploma first year
FC894 Building Surveying Diploma second year
FC896 Building Surveying Diploma third year
FC898 Building Surveying Diploma fourth year
FC990 Building Surveying Diploma part-time

Electrical and Electronic Engineering
FX982 First-year degree — full-time
FX982 First-year degree — part-time
FE984 Second-year degree
FE986 Third-year degree
FE988 Fourth-year degree
FE989 Fifth-year degree
FE989 Part-time degree — later years (full yearsemester 2 subjects)
FE472 Telecommunications Systems Management graduate diploma

Manufacturing Engineering
FX982 First-year degree — full-time
FX992 First-year degree — part-time
FP984 Second-year degree
FP986 Third-year degree
FP988 Fourth-year degree
FP989 Fifth-year degree
FP991 Part-time degree — later years (for students enrolled in full-yearsemester 2 subjects)
FP992 Part-time degree — later years (full yearsemester 2 subjects)
Guidelines for part-time study

With changes in the courses of study leading to degree qualifications, some part-time students may be unsure of the subjects they are required to pass in order to qualify for an award.

The following guidelines which the Engineering Faculty Board has established should be used to determine the subject requirements for students undertaking courses (including conversion programs) on a part-time basis:

(a) In general, students who have not at some time discontinued their course without permission, will follow the course of study in operation at the time of their initial enrolment at the Institute and as specified in the engineering section of the Handbook for that year.

(b) Despite the above, students who are undertaking a course of study which has been unduly prolonged, or who would benefit from transfer to a later course of study, may be transferred by the Engineering Faculty Board on the advice of the head of the student's department.

(c) Students who discontinue study without permission and who later wish to renew their enrolment at the Institute in that same course will be treated as new students but will receive such credit for the subjects previously passed as is determined by the Engineering Faculty Board on the advice of the head of the student's department.

(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 department.

(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 department, students may transfer from the course of study for which they are enrolled to a later course of study but should recognise that such a transfer may involve the undertaking of some additional subjects.

Minimum hours for part-time enrolment

The normal load for part-time students is approximately half that of full-time students, and is typically between 12 and 14 hours of class contact per week.

To enable the Faculty to admit as many students as possible within its quota limits, a minimum time commitment by part-time students is necessary. This minimum commitment has been set at 8 hours per week (one-third of a normal full-time load), unless special circumstances apply. Such special circumstances include non-availability of suitable classes, graduate studies, or cases where the proposed enrolment arrangements lead to a standard full-time program. In such special circumstances, the enrolment requires the specific approval of the head of the awarding department.

Part-time students who initially enrol for 8 hours per week or more, and who subsequently withdraw from certain subjects which reduces their enrolment to below 8 hours per week, will normally be processed as a total withdrawal from the course.

Suspension from courses

A student who fails any subject twice is not eligible for, or does not receive, a Faculty Pass for a group of subjects which includes a subject previously failed, will be considered for exclusion from further study in the course in which that student is enrolled.

Normally a third attempt at any subject will not be permitted. A student may repeat full-time studies on a full-time basis once only during a course, unless special approval is given by the Engineering Faculty Board.

If a Head of Department considers that a prima facie case for exclusion exists, the matter will be referred to the Engineering Courses Committee sitting as an exclusions sub-committee.

The procedure for considering engineering students recommended for exclusion is as follows:

1. Based on compliance with the faculty regulations on suspension from courses, the head of department submits a case for the possible exclusion of a student to the Engineering Courses Committee.

2. If the Engineering Courses Committee accepts that a case exists, the student is advised that his/her status in the course is not granted after it is considered at a subsequent meeting of the Committee; and that he/she may attend to present information relevant to the case.

3. The Committee may co-opt representatives when hearing a case for exclusion.

Enrolment

Although the Swinburne calendar is divided into two teaching semesters, engineering students need enrol only once for the subjects they are undertaking in any one year. Where it is necessary to change the list of subjects entered for at enrolment a student must complete an Amendment to Enrolment form available from Student Administration, the Engineering Faculty Office, or engineering department offices. Students should note that they must obtain the approval of the head of their awarding department before amending their enrolment.

Applicants offered a place in an engineering course will be expected to attend for enrolment early in February. Successful applicants will be notified of enrolment times when they are offered a place.

Continuing students in engineering courses are required to enrol in a standard full-time program. Students need to check Institute notice-boards for details which are made available towards the end of second semester. Students may be notified in writing by the Assistant Registrar (Engineering) at this time.

Applications submitted after first semester are considered on a case-by-case basis.

For further information regarding enrolment procedures and regulations refer to the general section of this Handbook.

Leave of absence

Students who have enrolled in a course who wish to take leave of absence with a view to re-enrolling at the end of a specified period should apply on an Amendment to Enrolment form. Leave of absence is granted by the Dean of Faculty (or his/her nominee). Students who have been granted leave of absence will be notified in writing by the Assistant Registrar (Engineering). 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 a case-by-case basis.
Approval and publication of results

1 General

(a) The Engineering Faculty Board policy is that all engineering students are informed of their progress as soon as possible after any prescribed subject has been completed.

(b) These regulations are normally applied by the Engineering Courses Committee acting as a sub-committee of the Engineering Faculty Board.

(c) In special circumstances individual student subject results may be deferred on medical grounds or other reasons of hardship. Deferral of faculty results for supplementary assessment is covered under 'Faculty passing regulations'. The period of deferral is determined in the light of particular circumstances.

2 Programs of study over two semesters

(a) Results for subjects completed in first semester are approved for publication as soon as possible after the end of semester.

(b) Where a subject continues over two semesters a mid-year progress report is released by the awarding department no later than the end of the first week of second semester.

(c) Results for subjects completed in second semester are approved for publication as soon as possible after the end of semester. Where appropriate, a Faculty Result is published at the same time.

3 Programs of study over one semester

(a) Results for subjects completed in first semester, including industrial experience, are approved for publication as soon as possible after the end of semester.

(b) Where a student is enrolled for first semester only, and a Faculty Result is required, the Faculty Result is approved for publication as soon as possible after the end of semester.

(c) Where a student is enrolled in course work in one semester and industrial experience in the other semester, a Faculty Result is normally approved for publication after the end of second semester. If the student's first semester results are unsatisfactory, the Faculty Result may be approved for publication as soon as possible after the end of first semester.

Awarding of honours degrees

Each year the Engineering Courses Committee will determine which graduating students should be awarded an Honours degree.

Four categories of honours will be awarded, viz:

Honours
Honours 2A
Honours 2B and Honours 3

Account will be taken of performance over the whole course, weighted to the later years. The proportion of final rankings allocated to each year will be as follows:

- 5th year 40%
- 4th year 30%
- 3rd year 15%
- 2nd year 10%
- 1st year 5%

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 department will submit ranking lists to the Courses Committee for its consideration.

Prizes, scholarships and awards

A complete list of the sources of financial support and the various awards available to students is given in the general section of this Handbook. Brief information on awards most likely to be of interest to engineering students is given below.

Prizes and Scholarships

There have been persistent warnings that Australian economic development would be gravely hindered by a shortage of engineers. Engineers constitute only 0.8%-0.9% of the labour force, which is low by comparison with countries such as Canada and Sweden which have higher levels of technology through similar structures of production.

Entrance Scholarships

In order to encourage and aid potential engineers, the Faculty offers 20 entrance scholarships of $1,800 each for full-time common first year of the Bachelor of Engineering program. Interested applicants should apply to the Faculty Office by November for the forthcoming year.

Co-op Scholarships

The Faculty, in conjunction with industry, offers Co-op Scholarships to the value of $8,000 per annum to full time engineering students in second and later years of their Engineering Degree course. Interested students should apply to the Faculty Office by November for the forthcoming year. In 1989 the following organisations responded to the national need for Engineers by providing a total of 21 Co-op Scholarships:

- ACL Comcork
- ACL Engine Parts
- The Broken Hill Proprietary Company Ltd
- Burns Bridge Australia Pty Ltd
- Davey McKee
- Ericsson
- Humes ARC
- Holden's Engine Company
- Melbourne & Metropolitan Board of Works
- Motorola Communications
- Motorola Semi Conductors
- Philip Morris Limited
- State Electricity Commission of Victoria

W.P. Brown Medal

This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course. The award is a medal and a premium of $100.

Esso Prize

A prize of $500 awarded annually to the outstanding final-year mechanical engineering student.

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

This is awarded to the best student in the course leading to the degree of Bachelor of Engineering with major studies in electrical and electronic engineering.

Lysaght Scholarships

Applicants for these scholarships must be qualified to enter the second year of the manufacturing engineering degree course. The value of the scholarships vary with the year of the course and range from approximately $1000 per year up to approximately $1350 per year, together with a $300 book allowance. The scholarships also provide for work experience and vacation employment at normal rates of pay.

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.
Faculty of Engineering

Faculty of Engineering

Y050 Bachelor of Technology

The Bachelor of Technology offers a new kind of degree in the exciting areas of technological need, and an entry scheme to provide access to students who may have otherwise closed the door to careers in these areas.

Career potential

"The major task facing the Victorian economy is to shift the balance of economic activity towards the knowledge and technology intensive activities which now constitute the basis of international competitiveness. This can only be achieved by . . . major improvements in the quality of educational provision in areas of relevance to key growth industries." 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 their 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 Industry Based Learning.

Admission requirements

Entry to first year

The first year of study is common to all areas of the Bachelor of Technology and the Bachelor of Engineering (except for minor differences for students admitted under alternative entry). Admission requirements are listed under "Admission to first year degree courses" earlier in the Engineering Faculty section of this Handbook.

Progress to second year

To be eligible for admission to the second year of the 3.5 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 B Tech. It will require the equivalent of at least 1 to 1.5 academic years of work.

Combined program with Graduate Diploma in Management

The Bachelor of Technoloy course and the Graduate Diploma in Management may be taken as a 'combined program' in the same manner as the Bachelor of Engineering and Graduate Diploma in Management.

Co-operative education

As with all undergraduate courses within the Faculty of Engineering, the course will be offered or, a co-operative education basis only.

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 Work Experience placement (6 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 40 semester hours.

Minor studies
A minor study is defined as a set of related subjects totalling 20 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 would carry the designation appropriate to the particular study area (e.g. Bachelor of Technology (Construction)).

Non-structured courses
Where students will select majors and accompanying minors according to their preferences. The degree would carry no area designation.

The subjects areas comprising the currently defined major and minor sequences are:

Major studies will be offered in the following areas:
- Air Conditioning
- Chemical Technology
- Communications Technology
- Computer Aided Design and Manufacture
- Computer Systems Technology
- Construction
- Ergonomics/Design
- Maintenance Engineering
- Manufacturing Technology
- Mechatronics
- Power Electronics Technology
- Process Control Technology
- Productivity Management
- Urban Development

Minor studies supporting the majors will be offered in the following areas:
- Building Services
- Chemical Technology
- Communications
- Computer Aided Design and Manufacture
- Computer Systems
- Construction Practices
- Engineering Science (Civil)

Management — Design
Management — Electrical
Management — Ergonomics
Management — Mechanical Engineering
Management — Manufacturing Technology
Management — Mathematical Modelling
Management — Mechanical Engineering
Management — Plant Instrumentation
Management — Power Electronics
Management — Process Control
“Unspecified”

P082 Graduate Diploma in Management

"The rate of change being experienced in today's economy requires all professionals to be continually updating their knowledge and qualifications. It is essential that engineers have the necessary management skills to complement their technical skills."

Career potential
The course is to prepare professionals who, being more extensively educated in management of enterprise and innovation, are able to take 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 who are more likely to contribute significantly to their work, their profession, the economy and society.

Studies include the environment and social impacts of successful professional practice, personal skills such as speaking, negotiating, communicating, team working and leadership as well as more conventional business, financial and economic studies.

The course work and the case studies at graduate level will relate management principles and practice particularly to the technology learnt during an undergraduate course.

In its combined mode, the course will offer a 'fast-track' to management education for graduates of the Engineering Faculty.

Admission requirements
(a) The completion of the Bachelor of Engineering or Bachelor of Technology degree offered by the Faculty of Engineering at Swinburne undertaken on a co-operative education basis incorporating integrated periods of industrial experience.

(b) The completion of another Bachelor of Engineering degree together with at least one year of relevant work experience at a suitable level of responsibility within an engineering field after completion of the degree.

(c) The completion of any other bachelor's degree together with at least two years' industrial experience.

(d) Students enrolled in either the Bachelor of Engineering or the Bachelor of Technology course at Swinburne may be admitted to a combined course program.

(e) 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 engineering work.

Duration of course
The course is undertaken by one year of full-time study or its equivalent part-time, or as a program combined with the Bachelor of Engineering or Bachelor of Technology program.

It is expected that students undertaking the course in a part-time mode will normally complete the requirements in two years of part-time study.
In the combined course mode, students would be required to undertake 60% of the total course content after completing the requirements of the Bachelor of Engineering or Bachelor of Technology. In addition, they would be required to have completed subjects equivalent in both content and philosophy to the subjects of the first semester of the full-time program in their undergraduate course.

**Course structure**
Integration of theory and practice is a key philosophy for all subjects.

In the first semester (full-time) the subject areas will be:

**EF611** Management Fundamentals 60 hours
Either
**EF612** Engineering Management 1 60 hours
or
**EF613** Industrial Engineering 60 hours
and
**EF614** Management Practice 1 60 hours

There will be three compulsory subjects in the second semester, and students will choose two others from an approved list. Subject areas to be particularly covered will be:

Compulsory subjects:
**EF620** Human Aspects 30 hours
**EF621** Financial and Legal Aspects 45 hours
**EF623** Marketing 45 hours

Two chosen from 1:
**EF625** Computing — Business Applications and Systems
**EF626** Engineering Applications — Engineering Communications

Engineering Management 2
**EF627** Risk Management 60 hours
**EF628** Entrepreneurial and Technology Management 60 hours
**EF629** Sales Management 60 hours
**EF630** Manufacturing Management 60 hours
**EF631** Physical Distribution Management 45 hours
**EF632** Corporate Communications 45 hours
**EF633** Energy Management 45 hours
**EF634** Civil Engineering Management 45 hours
**EF635** Construction Technology 45 hours
**EF636** Property and Production Risk Management 45 hours
**EF637** Health and Safety Management 45 hours
**EF638** Maintenance Management 45 hours
or other approved subject

and either
**EF640** Project 90 hours
or
**EF624** Management Practice 2 90 hours

Total contact: 450 hours

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1 Subject to demand: not all subjects will be offered each year.
2 Management Practice 2 will only be available to participants with at least three years full-time work experience undertaking the course on a part-time basis.

Credit may be granted to a maximum of 40% of the total course load for direct equivalence of subjects undertaken, or to a maximum of 30% of the total course load for other suitable and relevant studies undertaken.

Students may be granted exemption from subjects in the first semester on the basis of studies undertaken in other courses, but no exemptions may be granted from the latter 60% (second semester) of the course.

The course will, essentially, take a problem based approach, the learning being 'end' rather than 'means' driven.

The extensive use of Australian and relevant international case studies throughout the course will ensure that subjects are seen as opportunities to explore in more depth the analysis of various aspects of management science.

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### Y080 Graduate Diploma in Entrepreneurial Studies

This course recognises the need to train specialists in the skills required to bring an invention, original product or process from the stage of conception to that of full commercial utilisation, through innovation and enterprise.

**Admission requirements**

All applicants should comply with one of the following:

(a) The completion of a degree or diploma in engineering, science or applied science.
(b) The completion of a degree or diploma in business with experience in technology enterprises.
(c) 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.

In selecting students for the course, the course convener takes into consideration the balance of skills required for team participation.

In certain circumstances an interview may be required.

### Duration of course

The course consists of 405 formal contact hours over two years. The course is part-time only and is composed of two 15 week semesters per year. Each unit occupies the equivalent of 45 hours class contact during a semester and students are expected to spend at least the same period in private study.

Team teaching is used in most subjects as well as extensive input from specialist industry personnel.

**Course structure (1986 Syllabus)**

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BS791</strong></td>
<td>Marketing and Innovation</td>
</tr>
<tr>
<td><strong>ME785</strong></td>
<td>Technology and Innovation</td>
</tr>
<tr>
<td><strong>BS795</strong></td>
<td>Introduction to Financial Management</td>
</tr>
<tr>
<td><strong>MF821</strong></td>
<td>Managing and Developing Organisations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sem 1</th>
<th>Sem 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>
Second year

BS792  The Entrepreneur and
the law  45 —
MP841  Manufacturing Systems  45 —
BS796  Finance and Capital  45 —
EF700  The Business Plan  45 45
— 135 90

Third year (all students)

EF930  Innovation & New Ventures  30 30
EF931  Entrepreneurship in
Corporations  30 30
EF932  Entrepreneurial Project II  30 30

Degree of PhD

By research and thesis. Enquiries should be made to the Registrar.

Y091 Master of Innovation

The call for a new kind of education program for senior management has been rising in Australia over the past few years. The Faculty of Engineering, in association with the Faculty of Business, has introduced this Master's Degree by Coursework which provides a fresh approach.

This course is built upon the Faculty of Engineering's pioneering work in Enterprise Innovation through its introduction of the Graduate Diploma in Entrepreneurial Studies, its involvement in the Victorian Innovation Centre and the Victorian Enterprise Workshop program and the creation of the Institute for Innovation and Enterprise.

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 will provide the student with an in-depth knowledge of management, but will have an outward looking aspect. The graduate will not be the mere administrator of a business, but will be 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 at essentially the Honours 2A level or above;
(b) have completed the Graduate Diploma in Entrepreneurial Studies 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.

Admission with advanced standing

Students who have completed Swinburne's Graduate Diploma in Entrepreneurial Studies will be given full credit for the first year of the program.

Students who have completed Stage 2 of the Victorian Enterprise Workshop program to a standard considered by the Selection Committee to be satisfactory will receive credit for EF700 The Business Plan in Year One.

Duration of course

The course is designed to be completed after three years of part-time study. Continuing students from the Graduate Diploma in Entrepreneurial Studies 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. Case studies will form a major part of the teaching and learning technique as will preparation of Business Plans.

All subjects will be conducted on an inter-disciplinary, team teaching basis with heavy input from industry personnel.
Department of Civil Engineering

The department offers a range of tertiary courses in civil engineering, including a cooperative (sandwich) degree, a graduate diploma and the degree of Master by research. The department also conducts a cooperative (sandwich) diploma course in building surveying. The undergraduate degree course leads to a professional qualification in civil engineering which is recognised by the Institution of Engineers, Australia. The graduate diploma enables graduate engineers to undertake further specialised studies in construction technology. The degree of Master provides specialist research training in a selected topic in civil engineering fields, including:

- structural and bridge engineering
- foundation engineering, geology, soil and rock mechanics
- water engineering
- transportation engineering
- construction engineering
- municipal engineering
- environmental engineering and urban planning

Their work is interesting, rewarding and challenging and offers opportunities for both indoor and outdoor work, in Australia and overseas. Civil engineers qualify professionally by completing a tertiary course recognised by the Institution of Engineers, Australia, followed by three years of suitable professional experience. The twelve months of co-operative work experience is counted as six months of postgraduate experience for this purpose. Swinburne civil engineering graduates find employment with consulting firms, private industry, public authorities, and state government departments and municipalities.

Other careers

Although most graduates enter the civil engineering profession, intending students should realise that a civil engineering course also provides an excellent basis for a successful career in many other areas of industry and management.

C050 Bachelor of Engineering (Civil)

This course of study is undertaken by a cooperative (sandwich) education program extending over four-and-a-half years and including two semesters spent working with professional civil engineers in industry.

The course is a general one which gives a good grounding in civil engineering. Some specialisation occurs in the final semester of the course when students choose electives from a range of specialist topics available.

Part-time study

The course can be completed by part-time study. Students may select their own program of day or evening classes, from the required subjects of the course, with the approval of the head of department.

Availability of evening classes naturally depends on enrolment figures.

Structure of degree course

The degree course consists of seven academic semesters at Swinburne and two semesters in industry. The total length of the course is four-and-a-half years. In the third and fourth years, students spend one semester of each year at Swinburne and the remainder working in industry. For cooperative employment arranged by Swinburne, students receive a salary approximately two-thirds of that of a graduate engineer. Students benefit greatly from this first-hand industrial experience and liaison maintained between mentor, employer and student.

The fifth year, which consists of only one nineteen week semester, is spent at Swinburne.

Course structure (1985 syllabus)

First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM197</td>
<td>Engineering Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>SP197</td>
<td>Physics</td>
<td>45</td>
</tr>
<tr>
<td>SC197</td>
<td>Chemistry</td>
<td>45</td>
</tr>
<tr>
<td>MP193</td>
<td>Materials and Processes</td>
<td>60</td>
</tr>
<tr>
<td>AB151</td>
<td>Communication Skills</td>
<td>30</td>
</tr>
<tr>
<td>MP106</td>
<td>Engineering and Drawing and Graphics</td>
<td>45</td>
</tr>
<tr>
<td>CE113</td>
<td>Static Systems</td>
<td>30</td>
</tr>
<tr>
<td>EE187</td>
<td>Electronics, Circuits and Computing</td>
<td>75</td>
</tr>
<tr>
<td>ME126</td>
<td>Energy Systems</td>
<td>50</td>
</tr>
<tr>
<td>EF197</td>
<td>'Introduction to Engineering</td>
<td>15</td>
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</table>

* Plus 15 hours in selected non-teaching periods.

Second year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE211</td>
<td>Structural Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>CE231</td>
<td>Hydraulics</td>
<td>45</td>
</tr>
<tr>
<td>CE241</td>
<td>Surveying</td>
<td>60</td>
</tr>
<tr>
<td>CE251</td>
<td>Structural Design</td>
<td>60</td>
</tr>
<tr>
<td>CE261</td>
<td>Transport Engineering</td>
<td>45</td>
</tr>
<tr>
<td>CE281</td>
<td>Geoscience</td>
<td>45</td>
</tr>
<tr>
<td>MP282</td>
<td>Engineering Materials</td>
<td>30</td>
</tr>
<tr>
<td>SM292</td>
<td>Engineering/Mathematics</td>
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</tr>
<tr>
<td>* General Elective</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE391</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
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</table>

Third year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE311</td>
<td>Structural Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>CE331</td>
<td>Water Engineering</td>
<td>45</td>
</tr>
<tr>
<td>CE341</td>
<td>Surveying</td>
<td>75</td>
</tr>
<tr>
<td>CE351</td>
<td>Structural Design</td>
<td>90</td>
</tr>
<tr>
<td>CE361</td>
<td>Transport Engineering</td>
<td>60</td>
</tr>
<tr>
<td>SK390</td>
<td>Computer Programming</td>
<td>16</td>
</tr>
<tr>
<td>SM392</td>
<td>Engineering/Mathematics</td>
<td>45</td>
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</table>
### Fourth year

#### Semester 1
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE411</td>
<td>Structural Mechanics</td>
<td>60</td>
</tr>
<tr>
<td>CE421</td>
<td>Planning</td>
<td>30</td>
</tr>
<tr>
<td>CE431</td>
<td>Water Engineering</td>
<td>45</td>
</tr>
<tr>
<td>CE451</td>
<td>Structural Design</td>
<td>90</td>
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<tr>
<td>CE481</td>
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#### Semester 2
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*Approved subjects chosen from Arts or Business. See section entitled 'Engineering subject details' for information on general elective subjects.

### Fifth year

#### Hours

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*Electives (3) chosen from —

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<tr>
<td>CE592</td>
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### C044 Diploma of Building Surveying

The course which commenced in 1981, 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 Qualifications Board, which licenses Municipal 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.

Although the course is co-ordinated through the Civil Engineering Department, it is interdisciplinary in nature, with a teaching input from a number of departments, including the Building Construction Department of Swinburne College of TAFE.

### 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.

Career prospects are very good, since there is a continuing demand for building surveyors in the municipal field, with more restricted opportunities in the private sector.

### 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 course has recently been re-accredited, involving only minor changes to the course structure. The revised syllabus will commence in 1987.

The Diploma of Building Surveying is structured on a cooperative (sandwich) basis, and consists of six academic semesters at Swinburne and one semester in industry. The total length of the full-time course is three-and-a-half years.

First and second years are spent full-time at Swinburne. In third year, students spend the second semester working in industry. This cooperative (sandwich) 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, which consists of only one semester, is spent at Swinburne.

### Part-time study

The course can be completed by part-time study. Students should consult with staff to plan a part-time program of day classes from the required subjects of the course. Availability of evening classes depends on enrolment figures, and currently very few evening classes are available.

### Eligibility to apply for entry

Year 12

Successful completion of a Year 12 course of study which must include a branch of mathematics. Recommended Group 1 subjects are Physics or Chemistry. Group 2 subjects: In addition to the recommended Group 1 subjects, Group 2 subjects may be considered.

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 at Swinburne College of TAFE which includes subjects equivalent to the prerequisite and recommended Group 1 subjects are given guaranteed entry.
Course structure (1987 syllabus)

First year
- AB150 Communications 1  30 (Sem 1)
- BS196 Introductory Law  45 (Sem 1)
- CE114 Applied Mechanics  60 (Sem 1)
- CE171 Building Practice  45 (Sem 2)
- CE172 Building Structures 1  60 (Sem 2)
- CE191 Statutory Control 1  30 (Sem 2)
- ME189 Building Services 1  45 (Sem 2)
- MP186 Building Materials 1  45 (Sem 2)
- SM191 Computations  45 (Sem 2)

Second year
- AB250 Behavioural Studies  30 (Sem 1)
- CE242 Land Surveying  75 (Sem 1)
- CE253 Structural Design 1  75 (Sem 1)
- CE272 Building Structures 2  45 (Sem 1)
- CE273 Practical Inspection  45 (Sem 1)
- CE274 Scaffolding  A  15 (Sem 1)
- CE275 Scaffolding  B  15 (Sem 1)
- CE282 Geomechanics  60 (Sem 1)
- CE283 Statutory Control 2  30 (Sem 1)
- ME289 Building Services 2  45 (Sem 1)
- MP286 Building Materials 2  60 (Sem 1)

Third year
- CE392 Industrial Experience  60 (Sem 1)

Fourth year
- BS400 Administration  60 (Sem 1)
- CE403 Professional Projects  30 (Sem 1)
- CE422 Urban Planning 2  30 (Sem 1)
- CE452 Structural Design 3  60 (Sem 1)
- CE474 Building Structures 4  45 (Sem 1)
- CE475 Fire Engineering  45 (Sem 1)
- CE482 Geomechanics 2  45 (Sem 1)
- CE493 Building Law and Contracts  45 (Sem 1)

Hours

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<td>AB150 Communications 1</td>
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<td>CE114 Applied Mechanics</td>
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<td>CE171 Building Practice</td>
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<td>CE172 Building Structures 1</td>
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<td>CE191 Statutory Control 1</td>
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<td>ME189 Building Services 1</td>
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<td>MP186 Building Materials 1</td>
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<td>SM191 Computations</td>
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<td>CE242 Land Surveying</td>
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<td>CE253 Structural Design 1</td>
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<td>CE272 Building Structures 2</td>
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<td>CE273 Practical Inspection</td>
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<td>CE274 Scaffolding  A</td>
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<td>CE275 Scaffolding  B</td>
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<td>CE282 Geomechanics</td>
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<td>CE283 Statutory Control 2</td>
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<td>ME289 Building Services 2</td>
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<tr>
<td>MP286 Building Materials 2</td>
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<tr>
<td>CE392 Industrial Experience</td>
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</table>

Faculty of Engineering

Prerequisites

Students should have a professional qualification in engineering or architecture and a minimum of two years’ experience following graduation to gain admission.

Course structure (1985 syllabus)

First year
- CE570 Construction Technology  60 (1 sem)
- CE590 Civil Engineering Project Control  60 (1 sem)
- CE691 Civil Engineering Management  60 (1 sem)
- CE692 Communications  60 (1 sem)

Second year
- CE770 Construction Engineering 120 (whole yr)
- CE771 Construction Project  60 (1 sem)
- CE790 Financial Project Control  60 (1 sem)

YO96 Master of Engineering

Graduates who hold a Bachelor’s degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar’s Office.

C082 Graduate Diploma in Civil Engineering Construction

This course is designed to provide practising engineers and architects with a knowledge of the latest developments in construction engineering and with the capacity to control these techniques from the financial and technical viewpoints.

The total course duration is 480 hours, usually undertaken as a two-year part-time course and requiring attendance for two nights of the week. It runs over four semesters, each of fifteen teaching weeks.

The use of case studies is emphasised in the learning program and students are expected to participate in syndicate discussion activity, especially in civil engineering areas. Parts of the course will be conducted in short periods of intensive full-time study to facilitate this syndicate discussion. During the course students are required to undertake industrially-oriented projects and are expected to be working in an engineering environment.

Practising construction engineers assist Institute staff in teaching selected parts of the course.

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Department of Electrical and Electronic Engineering

Electrical and electronic engineering is concerned with any form of plant, system or device operated by electrical or electronic means, and includes specialties, such as electronics, communications, computer hardware and software, control, electrical power and machines.

The department offers courses leading to professional qualifications in electrical engineering, electronic engineering and computer systems engineering. In addition, continuing education courses in selected subjects for professional engineers are provided from time to time.

Modern laboratory facilities are available for the graduate student and visiting staff. Some laboratories are devoted to electric circuits, electronics, advanced electronics, communications, control systems and computing, electrical machines, power systems, advanced computing systems, and student design projects. A constant temperature room is provided for the maintenance of electrical standards, and a high-quality screened room is available for the conduct of measurements and experimentation in an interference-free environment. A high-voltage laboratory for insulation testing up to 100kV is also available. The new computer systems laboratory provides facilities for the computer systems engineering stream.

A mentor scheme is operated by the department to facilitate contact between staff and students and to provide guidance to individual students, as they progress through the course. Mentors are all experienced staff members.

The department undertakes applied research and consulting and staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of department or to the Swinburne Liaison Officer.

Courses offered

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>E050</td>
<td>Degree of Bachelor of Engineering (Electrical and Computer Systems Engineering)</td>
<td>60</td>
<td>45</td>
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<tr>
<td>Y097</td>
<td>Degree of Master of Engineering by research</td>
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<td>45</td>
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<tr>
<td>E084</td>
<td>Graduate Diploma in Telecommunication Systems Management</td>
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<td>E085</td>
<td>Graduate Diploma in Computer Systems Engineering</td>
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<td>E092</td>
<td>Degree of Master of Engineering (Information Technology) by coursework</td>
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Career potential

Graduates from Swinburne are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities, in private industry, or the armed services.

The types of engineering employment available include the investigation, design, manufacture, testing, development, installation, maintenance or sales of all types of electrical and electronic plant and equipment.

The various fields of electrical and electronic engineering activity include those of electric power supply and utilization, electrical machines and appliances, electrical traction, illumination engineering, communication systems, automatic control systems, electronic equipment, analogue and digital computer development and applications, and medical electronics.

The introduction of the computer systems engineering stream which commenced in 1986, provides graduates with the software skills to enable them to be employed in the computer industry and to apply computer systems and equipment to engineering applications and industrial processes.

Bachelor of Engineering (Electrical and Electronic/Computer Systems Engineering)

Year enrolment codes

- Y057 Common first year
- E050 Later years (unstreamed)
- E052 Electrical Engineering Stream
- E053 Electronic Engineering Stream
- E054 Computer Systems Engineering Stream

The degree course is a general electrical and electronic engineering program for the first three years, with a general electrical and electronic stream and a computer systems engineering stream in year four. In fifth year there are three streams offered — a computer systems engineering stream, an electrical stream and an electronics stream. All streams offer a choice of specialist electives.

Course structure (1986 syllabus) (Course under review during 1989)

First year Y057

<table>
<thead>
<tr>
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<td>Engineering Mathematics</td>
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<td>SP197</td>
<td>Physics</td>
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<td>SC197</td>
<td>Chemistry</td>
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<td>MP183</td>
<td>Materials and Processes</td>
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<td>AB151</td>
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<td>Engineering Drawing and Graphics</td>
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<td>EE157</td>
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*Plus 15 hours in selected non-teaching periods.

Second year E050

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<tr>
<td>EE255</td>
<td>Electrical Design and Computing</td>
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<td>EE282</td>
<td>Communication Principles</td>
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<td>EE283</td>
<td>Electrical Circuits and Fields</td>
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<td>EE286</td>
<td>Electrical Machines and Measurements</td>
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<td>EE297</td>
<td>Electronics</td>
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<td>EE298</td>
<td>Electronic Circuits and Devices</td>
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<td>MP285</td>
<td>Materials and Environment</td>
<td>45</td>
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<td>SM234</td>
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<td>EE301</td>
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<td>EE357</td>
<td>Electrical Design</td>
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<td>EE383</td>
<td>Electromagnetic Fields</td>
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<tr>
<td>EE385</td>
<td>Electrical Power and Machines</td>
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<tr>
<td>EE387</td>
<td>Electronics and Communications</td>
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<td>ET389</td>
<td>Linear Systems and Control</td>
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The degree course qualifies graduates for full exemption from the entrance examinations of the Institution of Engineers Australia and the Institute of Radio and Electronic Engineers.
### Semester 1

<table>
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<th>Course Title</th>
<th>Hours</th>
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<td>EE475</td>
<td>Electrical Power and Machines</td>
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<td>EE477</td>
<td>Electronics and Communications</td>
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<tr>
<td>EE499</td>
<td>Control Systems</td>
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<td>MP422</td>
<td>Engineering Administration</td>
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<tr>
<td>SM494</td>
<td>Engineering Mathematics, General Elective</td>
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### Semester 2

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<td>EE401</td>
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### Fourth year

#### Electrical and Electronic Stream E050

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<td>Design and Project</td>
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<td>EE575</td>
<td>Electrical Power and Machines</td>
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<td>EE576</td>
<td>Electronics</td>
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<td>EE579</td>
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<td>EE590</td>
<td>Computer Systems Engineering</td>
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<td>EE591</td>
<td>High Voltage Systems</td>
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<tr>
<td>EE592</td>
<td>Communication Systems</td>
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<tr>
<td>EE593</td>
<td>Electrical Machine Drives</td>
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<td>EE594</td>
<td>Electronic Systems</td>
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<td>EE595</td>
<td>Operations Research in Electronics</td>
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<td>EE599</td>
<td>Control Systems</td>
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### Fifth year

#### Computer Systems Stream E054

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<tr>
<td>EE631</td>
<td>Mathematics</td>
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<tr>
<td>EE632</td>
<td>Electrical Power &amp; Electronics</td>
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<tr>
<td>EE633</td>
<td>Administrative Practice</td>
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<tr>
<td>EE634</td>
<td>Telecommunication Principles</td>
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<td>SK631</td>
<td>Computer Programming</td>
<td>30</td>
</tr>
</tbody>
</table>

### E084 Graduate Diploma in Telecommunication Systems Management

This full-time course is intended to educate students in the fundamental technologies associated with the management of telecommunication systems, where management is taken to include planning, organizing and controlling. The course provides a broad familiarisation with telecommunications and computing technologies, and how they may be used to satisfy user requirements. It also covers the organisation of the system structure, and of component systems, as they affect physical and human resources, and the control of technical standards to meet the system user requirements.

The course is designed for non-technical graduates who are, or intend to be, employed in a management role in telecommunications networks. It is particularly directed towards the needs of the Australian Army, and other organisations, where graduates who are not professional engineers occupy managerial positions in telecommunications activities.

The course is also suitable for non-technical graduates who wish to gain an understanding of the new telecommunication technologies as applied to libraries, instructional television networks, or distance teaching.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, and some experience in telecommunications activities is preferred.

The course is scheduled over one year of full-time day attendance, but evening classes may be offered if there is sufficient demand.

### Course structure (1983 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE731</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE733</td>
<td>System Planning and Control</td>
<td>90</td>
</tr>
<tr>
<td>EE734</td>
<td>Telecommunication Systems</td>
<td>90</td>
</tr>
<tr>
<td>EE735</td>
<td>Elective Subject</td>
<td>60</td>
</tr>
</tbody>
</table>
E085 **Graduate Diploma in Computer Systems Engineering**

This part-time course is intended to produce graduates with a set of computer systems engineering skills, based soundly on engineering and computer science principles.

There is a demand for continuing professional education in this field from qualified engineers, who require enhancement of skills in computer science and from computer professionals who require skills in disciplines such as electronics, communications and control. To meet the requirements of these two entry groups, the graduated diploma course has two streams, which converge to a common second year.

The two entry streams of the proposed course are intended to provide students with a satisfactory set of skills for the common second year of the course. Some diversity is offered in the common second year by the opportunity to choose individual design projects.

To gain admission to the course, applicants must have a degree, diploma or equivalent qualification, together with relevant experience.

The course will only be available on a part-time basis. The duration will be four (4) semesters, with a total course time of 480 contact hours.

**Course structure (1988 syllabus)**

**First year**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stream for engineers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE641</td>
<td>Fundamentals of computing</td>
<td>60</td>
</tr>
<tr>
<td>EE642</td>
<td>Data structure</td>
<td>60</td>
</tr>
<tr>
<td>Stream for computer scientists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE645</td>
<td>Semiconductor electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE646</td>
<td>Introduction to digital systems design</td>
<td>60</td>
</tr>
</tbody>
</table>

| Semester 2 | |
| Stream for engineers | |
| EE643 | Computer systems software | 60 |
| EE644 | Computer systems design | 60 |
| Stream for computer scientists | |
| EE647 | Measurements and control | 60 |
| EE644 | Computer systems design | 60 |

**Second year**

| Semester 1 | |
| EE741 | Computer systems and software engineering | 60 |
| EE742 | Computer communications and control | 60 |

| Semester 2 | |
| EE743 | Computer systems case studies | 60 |
| EE744 | Design and Project | 60 |

**Y097 Master of Engineering**

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidature for the degree of Master of Engineering.

The higher degree programs currently available require the presentation of a major thesis based on original research, investigation or development work, carried out either within Swinburne or externally, providing that adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar’s Office.

**E092 Master of Engineering (Information Technology) by coursework**

The requirements for the first and second years of the course are met by successful completion of the Graduate Diploma in Computer Systems Engineering at an acceptable standard.

**Third year**

| Semester 1 | |
| Real time processing and control | |
| Voice and image processing | |

| Semester 2 | |
| VLSI and application-specific hardware design | |
| Industrial project management | |

**Fourth year**

| Project and thesis | |
Faculty of Engineering

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 (1985 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hours</strong></td>
<td><strong>Hours</strong></td>
</tr>
</tbody>
</table>

First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>First Year Semester 1</th>
<th>First Year Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME197</td>
<td>Engineering Mathematics</td>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td>SP197</td>
<td>Physics</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>SC197</td>
<td>Chemistry</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>MP183</td>
<td>Materials and Processes</td>
<td>-</td>
<td>60</td>
</tr>
<tr>
<td>AB151</td>
<td>Communication Skills</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>MP106</td>
<td>Engineering Drawing and Graphics</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>CE113</td>
<td>Static Systems</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>EE187</td>
<td>Electronics, Circuits and Computing</td>
<td>75</td>
<td>45</td>
</tr>
<tr>
<td>ME126</td>
<td>Energy Systems</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>EF197</td>
<td>Introduction to Engineering*</td>
<td>1k</td>
<td>1k</td>
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</table>

*Plus 15 hours in selected non-teaching periods.

Second year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Second Year Semester 1</th>
<th>Second Year Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB293</td>
<td>Liberal Studies</td>
<td>45</td>
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<tr>
<td>SK293</td>
<td>Professional Computing</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>SM297</td>
<td>Engineering Mathematics A</td>
<td>60</td>
<td>-</td>
</tr>
<tr>
<td>SM297</td>
<td>Engineering Mathematics B</td>
<td>-</td>
<td>60</td>
</tr>
<tr>
<td>ME213</td>
<td>Fluid Mechanics</td>
<td>-</td>
<td>30</td>
</tr>
<tr>
<td>ME214</td>
<td>Solid Mechanics</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>ME215</td>
<td>Dynamics and Kinematics</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>EE298</td>
<td>Electronic Circuits and Devices</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>MP222</td>
<td>Industrial Engineering</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>MP221</td>
<td>Manufacturing Practice (P)</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>MP224</td>
<td>Design for Manufacturing (P)</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>MP254</td>
<td>CAD/CAM</td>
<td>30</td>
<td>-</td>
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<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP203</td>
<td>Industrial Processes (C)</td>
<td>30</td>
<td>60</td>
</tr>
<tr>
<td>MP223</td>
<td>Introduction to Chemical Engineering (C)</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>MP233</td>
<td>Chemical Engineering (P)</td>
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<td>or</td>
<td>or</td>
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<tr>
<td>ME319</td>
<td>Fluid Mechanics</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>MJ341</td>
<td>Manufacturing Technology (P)</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>MP351</td>
<td>Design for Manufacture (P)</td>
<td>60</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME329</td>
<td>Applied Mechanics</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP343</td>
<td>Stagewise Processes</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>MP353</td>
<td>Design for Manufacture (C)</td>
<td>60</td>
<td>-</td>
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</table>

Third year

Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP300</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
<td>24 weeks</td>
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</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester 1 Hours</th>
<th>Semester 2 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM396</td>
<td>Engineering Mathematics</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>MP381</td>
<td>Systems Engineering</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>MP301</td>
<td>Instrumentation and Control</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>MP321</td>
<td>Engineering Administration</td>
<td>60</td>
<td>-</td>
</tr>
<tr>
<td>SK396</td>
<td>Computer Science</td>
<td>30</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME341</td>
<td>Applied Mechanics</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MJ341</td>
<td>Manufacturing Technology (P)</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>MP351</td>
<td>Design for Manufacture (P)</td>
<td>60</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ME329</td>
<td>Fluid Mechanics</td>
<td>45</td>
<td>-</td>
</tr>
<tr>
<td>or</td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MP343</td>
<td>Stagewise Processes</td>
<td>75</td>
<td>-</td>
</tr>
<tr>
<td>MP353</td>
<td>Design for Manufacture (C)</td>
<td>60</td>
<td>-</td>
</tr>
</tbody>
</table>

Department of Manufacturing Engineering

The department offers courses leading to professional qualifications in manufacturing and production engineering. Master of Engineering degree programs are available by research in selected areas of study and by coursework in the area of Computer Integrated Manufacturing. Graduate diploma courses are conducted in chemical engineering, biochemical engineering, industrial management, and manufacturing technology.

The undergraduate courses in manufacturing engineering are cooperative programs which enable a student to gain some industrial experience during the course. For degree students the industrial experience totals twelve months.

In addition to the complete courses of study above, the department is responsible for teaching Engineering Drawing and Manufacturing Materials in all engineering undergraduate courses conducted by other departments. Continuing education courses are provided from time to time in selected areas. Modern well-equipped laboratories are provided for teaching, research and testing. The department is a member of Computer Aided Manufacturing — International Inc.

A mentor scheme is operated by the department to engender contact between staff and students and to provide guidance for individual students.

Courses offered

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P050</td>
<td>Degree of Bachelor of Engineering (Manufacturing)</td>
<td>Manufacturing engineers are engaged in a wide variety of industries and organisations including manufacture of aircraft, automobiles, appliances, chemicals, food, plastics, ceramics, textiles and clothing. They are also involved in goods distribution and retailing organisations. Their activities are wide-ranging: factory management; operations and production planning; quality control; design of tooling, products and processes; materials handling; research and development. The undergraduate programs leading to the award of the degree of Bachelor of Engineering (Manufacturing) are designed to prepare the student for a professional career in any field of manufacturing. Developments in Australian industry, particularly towards increased productivity and the use of more sophisticated manufacturing techniques and control systems, including the use of computer-based systems, indicates that for many years the demand for manufacturing engineers will exceed the number available.</td>
</tr>
<tr>
<td>P085</td>
<td>Graduate Diploma in CAD/CAM</td>
<td>Bachelor of Engineering (Manufacturing)</td>
</tr>
<tr>
<td>P083</td>
<td>Graduate Diploma in Chemical Engineering</td>
<td></td>
</tr>
<tr>
<td>P081</td>
<td>Graduate Diploma in Manufacturing Technology</td>
<td></td>
</tr>
<tr>
<td>Y098</td>
<td>Degree of Master of Engineering, by research</td>
<td></td>
</tr>
<tr>
<td>P091</td>
<td>Degree of Master of Engineering (Computer Integrated Manufacturing) by coursework</td>
<td></td>
</tr>
</tbody>
</table>

Career potential

Manufacturing/Production/Chemical engineering

Bachelor of Engineering (Manufacturing)
Fourth year

Semester 1

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP436 Computer Applications</td>
<td>30</td>
</tr>
<tr>
<td>MP431 Industrial Engineering</td>
<td>45</td>
</tr>
<tr>
<td>MP421 Industrial Management</td>
<td>45</td>
</tr>
<tr>
<td>MP411 Manufacturing Systems</td>
<td>30</td>
</tr>
<tr>
<td>MP471 Numerical Engineering</td>
<td>45</td>
</tr>
<tr>
<td>MP461 Manufacturing Technology (P)</td>
<td>75</td>
</tr>
<tr>
<td>MP431 Design for Manufacture (P)</td>
<td>60</td>
</tr>
<tr>
<td>MP463 Heat Transfer</td>
<td>75</td>
</tr>
<tr>
<td>MP433 Design for Manufacture (C)</td>
<td>60</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP400 Industrial Experience</td>
<td>24</td>
</tr>
<tr>
<td>MP531 Industrial Engineering</td>
<td>45</td>
</tr>
<tr>
<td>MP521 Industrial Management</td>
<td>45</td>
</tr>
<tr>
<td>MP502 Manufacturing Project</td>
<td>190</td>
</tr>
<tr>
<td>MP511 Manufacturing Technology (P)</td>
<td>75</td>
</tr>
<tr>
<td>MP551 Design for Manufacture (P)</td>
<td>75</td>
</tr>
<tr>
<td>MP533 Design for Manufacture (C)</td>
<td>75</td>
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</table>

Semester 3 only

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Elective</td>
<td>45</td>
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</table>

Fifth year

Semester 1 only

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP540 Industrial Experience</td>
<td>24</td>
</tr>
<tr>
<td>MP611 Manufacturing Technology (P)</td>
<td>75</td>
</tr>
<tr>
<td>MP651 Design for Manufacture (P)</td>
<td>75</td>
</tr>
<tr>
<td>MP633 Design for Manufacture (C)</td>
<td>75</td>
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</table>

<table>
<thead>
<tr>
<th>Available subjects are:</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA411 Non-Newtonian Heat Mass and Momentum Transfer</td>
<td>90</td>
</tr>
<tr>
<td>EA491 Biochemical Engineering</td>
<td>90</td>
</tr>
<tr>
<td>ME729 Fluid Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>MP517 Industrial Processes and Pollution Control</td>
<td>60</td>
</tr>
<tr>
<td>MP711 Mass Transfer</td>
<td>60</td>
</tr>
<tr>
<td>MP712 Unit Operations</td>
<td>60</td>
</tr>
<tr>
<td>MP713 Chemical Engineering Design 1</td>
<td>75</td>
</tr>
<tr>
<td>MP714 Stagewise Processes</td>
<td>75</td>
</tr>
<tr>
<td>MP715 Heat Transfer</td>
<td>75</td>
</tr>
<tr>
<td>MP724 Chemical Engineering Design 2</td>
<td>75</td>
</tr>
<tr>
<td>MP716 Physical and Chemical Equilibria</td>
<td>30</td>
</tr>
<tr>
<td>MP751 Design Applications</td>
<td>75</td>
</tr>
<tr>
<td>SC582 Biochemistry</td>
<td>30</td>
</tr>
<tr>
<td>SC583 Physical Biochemistry</td>
<td>30</td>
</tr>
<tr>
<td>SC550 Environmental Chemistry</td>
<td>105</td>
</tr>
</tbody>
</table>

P081 Graduate Diploma in Manufacturing Technology

This course is designed to increase the effectiveness of engineers, scientists and technologists who hold positions in industry or public service and find themselves ill-equipped to function efficiently in a changing manufacturing environment.

The course provides a sound understanding of current manufacturing technology, up-to-date techniques of acquiring information, an understanding of the latest scientific methods and training and practice in engineering communication.

Candidates for admission should normally hold a degree or diploma in engineering or science. A limited number of applicants without formal qualifications may be admitted to the course provided they have substantial relevant experience in manufacturing.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory subjects</td>
<td></td>
</tr>
<tr>
<td>Compulsory subjects</td>
<td></td>
</tr>
<tr>
<td>MP618 Production Technology 1</td>
<td>75</td>
</tr>
<tr>
<td>MP619 Production Technology 2</td>
<td>75</td>
</tr>
<tr>
<td>MP613 Production Technology 3</td>
<td>75</td>
</tr>
<tr>
<td>MP651 Production Design 1</td>
<td>60</td>
</tr>
<tr>
<td>MP652 Production Design 2</td>
<td>60</td>
</tr>
<tr>
<td>MP614 Systems Engineering</td>
<td>30</td>
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<tr>
<td>MP615 Instrumentation and Control</td>
<td>30</td>
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</table>

Elective subjects (60 hours)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP432 Work Study</td>
<td>60</td>
</tr>
<tr>
<td>MP631 CAD/CAM Technology</td>
<td>30</td>
</tr>
<tr>
<td>MP632 Computer Based Management Systems</td>
<td>30</td>
</tr>
</tbody>
</table>

P085 Graduate Diploma in CAD/CAM

This advanced study program is conducted by the Department of Manufacturing Engineering in the Faculty of Engineering at Swinburne and the CIM Centre.

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 Australian Manufacturing Industry.
Entrance requirements
Candidates for the graduate diploma shall have either:
- completed a degree or diploma in Engineering or Science at a recognised University or College;
- other qualifications or experience which, in the opinion of the Head of the Manufacturing Engineering Department, are of a satisfactory standard, and are suitable preparation for the graduate diploma program.

Duration
The course comprises 375 hours and will be scheduled to take two nights per week of study for the two year period. Provision may be made to enable students to complete the course by full-time study if demand is sufficient.

Course structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP621</td>
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<tr>
<td>EE626</td>
<td>45</td>
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<td>MP631</td>
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<td>MP622</td>
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<td>MP624</td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP632</td>
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<tr>
<td>MP623</td>
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<td>MP625</td>
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<td>MP617</td>
<td>30</td>
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<tr>
<td>MP616</td>
<td>45</td>
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</tbody>
</table>

Y098 Master of Engineering
(By research)

Graduates who hold a Bachelor's degree and who have shown a high standard of academic achievement in that course may be admitted to candidacy for the degree of Master of Engineering, by research.

The 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, provided adequate facilities and supervision can be arranged. External work can be carried out in an approved industrial, governmental, educational or research organisation.

Copies of the Statute for the degree of Master and application forms are available from the Registrar's Office.

P091 Master of Engineering (Computer Integrated Manufacturing)
by coursework

The aim of the course is to prepare graduates in engineering and the physical sciences for future roles in the development and application of computer integrated manufacturing in Australian manufacturing industry. The graduates must have proven academic ability and have had some relevant work experience.

It is intended that the graduates from this course will be readily employable by those manufacturing companies which intend to adopt computer integrated manufacturing.

It is also envisaged that some graduates from the program may seek employment related to the marketing of hardware and software systems or as consultants.

Entrance requirements
Candidates for the degree of Master of Engineering, by coursework shall:

1. Have completed, at Swinburne, the degree of Bachelor of Engineering with distinction, and shall be in employment in an area relevant to the course.
2. Have qualified at a university or other institution for a degree in Engineering which, in the opinion of the Engineering Faculty Board, was completed at a comparable standard to a Swinburne degree with distinction, and is a suitable preparation for study in the Masters program. Such candidates would also be required to be employed in an area relevant to the course.
3. Have qualifications and experience which, in the opinion of the Engineering Faculty Board, are of a satisfactory standard and are suitable preparation for study in the Masters program.

All students shall be required to satisfy an interview panel as to their suitability for the course.

Duration of course
The course is designed to be completed in three years of part-time study.

Students taking the course on a part-time basis will not normally be permitted to extend their course enrolment beyond five years, except when leave of absence has been granted.

Details of course structure
The course will consist of three stages.
In the first stage there will be core studies in appropriate mathematical techniques: Advanced Computing, Control Systems and Devices, and Computer Integrated Manufacturing.

The second stage will encompass advanced studies in Computer Aided Design, Machines and Machine Systems, Management Systems and Design and Analysis of CIM Systems.

In the third stage of the course, students will undertake an individual research or design project, to be examined by thesis, in an area relevant to the skills of the student, the needs of industry, and the experience and equipment available within the Institute.

Course structure

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<thead>
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Course total 720
Department of Mechanical Engineering

The degree course provides a thorough education in engineering science principles and applications. With these principles the course combines a broad span of studies, such as economics, psychology, human engineering, administration, communication techniques, to a professional engineer.

Study work in buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue and hybrid computers. There is a strong emphasis on the teaching approach and use of tutorial laboratory work.

The year co-ordinator scheme which operates in the mechanical engineering department provides each student with a ready source of advice on any aspect of course or career.

To qualify for the degree, each student must complete two periods of approved industrial experience supervised by both Swinburne engineering staff and engineers in industry. This is arranged in the third and fourth years of study.

The cooperative industrial experience in the course amounts to forty-eight weeks. The experience gained is of considerable value in providing opportunities to learn from practising engineers and in helping to consolidate the more formal theoretical work undertaken at Swinburne. The Mechanical Engineering Department gratefully acknowledges the assistance of engineers in many companies and government departments whose support has greatly enhanced the value of these periods of industrial experience.

Courses offered

M050 Bachelor of Engineering (Mechanical)
M089 Degree of Bachelor of Engineering (Mechanical)
M082 Graduate Diploma in Air-conditioning
M081 Graduate Diploma in Maintenance Engineering
M083 Graduate Diploma in Risk Management

Career potential

Mechanical engineering may be defined as a profession in which a knowledge of mathematical and natural sciences gained by study, experience and practice is applied, with judgement and regard for the conservation of natural order, to develop ways to use the material and energy resources available, for the benefit of mankind.

Although, in Australia, it is a relatively new area of employment for women, those entering the field of mechanical engineering have found it offers excellent career opportunities.

M050 Bachelor of Engineering (Mechanical)

The degree course program combines a thorough education in the application of engineering science principles with a broad span of studies important to a professional engineer.

Streaming in later years of the course is offered through a system of technical elective subjects which allows students to select a particular emphasis for their fourth-and-a-half year cooperative education program.

Degree course revision

Students entering the first year of the mechanical engineering course will be enrolled in the common first year of the cooperative course first introduced in 1980, and since revised to the Bachelor of Engineering (Mechanical) 1985 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 (1985 syllabus)

First year

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Plus 15 hours selected non-teaching periods.

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Compulsory

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**Engineering Management (do i)**

BS458 Decision Analysis and Financial Management

ME451 Technical Planning and Sales Engineering

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**Semester 8**

ME491 Industrial Experience 24 weeks

**Fifth year**

**Semester 9**

Compulsory

ME582 Engineering Project 160

Electives

- Non-engineering Elective
  - Engineering Science I 45
  - Do 2 of:
    - Advanced Mathematics
    - Energy Systems
    - ThermoFluid Mechanics

ME502 Engineering Science II 60

ME502A Mechanics of Materials

ME502B Mechanics of Materials

ME502C Instrumentation and Systems

ME503 Engineering Technology 90

ME503A Advanced Design

ME503B Numerical Continuum Mechanics

ME503C Ergonomics

ME504 Engineering Management 60

ME504A Marketing, Law and Technological Forecasting

ME504B Decision Analysis and Financial Management

ME504C Plant Information Systems

---

**Maintenance subjects**

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- Maintenance Management 1 30
- Maintenance Engineering Science 45
- Maintenance Practices and Technology 60
- Maintenance Management 2 60
- Major Project 45

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**Faculty of Engineering**

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.

**M082 Graduate Diploma in Air-conditioning**

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering or applied science, and who wish to take advanced studies based on applied thermodynamics and controls. The course consists of six subjects which are usually taken by evening attendance over a period of two years.

**Course structure (1988 syllabus)**

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- Air-conditioning 120
- Refrigeration 90
- Air-conditioning 60
- Refrigeration 45
- Instrumentation and System Control 45
- Project and Energy Management 60

---

**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 Mechanical Engineering Department.

The course will usually spread over two years with a total of 420 class hours.

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*Approved subjects chosen from Arts or Business, see section entitled 'Engineering subject details' for information on general electives.*
Course structure (1989 syllabus)

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<tr>
<td>ME</td>
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References

Students should note the following definitions with regard to reading material prescribed for engineering subjects:

**Preliminary reading**

Introductory material which students are expected to read before classes commence.

**Textbooks**

Materials essential to the subject.

**References**

Materials that will be referred to throughout the duration of the subject.

Unless otherwise specified, students are advised not to purchase textbooks or references until classes commence.

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**AB150 Communications 1**

Two hours per week for two semesters

A first-year subject in the diploma course in building surveying.

This subject introduces students to techniques for developing basic skills in written and oral communication as well as an understanding of social and urban issues relevant to building surveyors.

**References**

To be advised.

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**AB250 Behavioural Studies**

Four hours per week for one semester

A second-year subject in the diploma course in building surveying.

This subject is designed to integrate with administration subjects. Apart from a credit of psychology text, the classes are focused on experiential learning. To this end active participation in classes is required. These class sessions are focused on self-awareness as a basis for communication skills, assertiveness, use of learning theories in modifying behaviour and stress management. In stress management, areas such as relaxation, nutrition and psychological stress reduction are covered.

**Textbook**

AB253 Liberal Studies
Three hours per week for one semester
A second-year subject in the degree course in manufacturing engineering.
The aim of this subject is to introduce students to various concepts and processes associated with employment in an industrial society.
Topics will be drawn from the following:
- communication: personal and interpersonal communication skills applied to the work situation. Psychological aspects of communication;
- behaviour of work groups: use of learning theories in acquiring new behaviours and modifying existing behaviours;
- stress management: physiological factors such as nutrition, relaxation, psychological factors;
- industrial democracy: decision-making, worker participation, industrial conflict, ways to resolve conflict;
- basic requirements are active participation in seminars, type-class setting and thorough knowledge of the textbook.

Textbook

AB350 Communications 2
Two hours per week for one semester
A third-year subject in the diploma course in building surveying which aims to develop:
- further skills in specific areas of communication (including relating to the public, report writing, presentations, work diaries);
- critical thinking skills and an understanding of social and political decision-making processes;
- an awareness of the social responsibilities of professional groups.

References
To be advised

AB752 Applied Psychology
Three hours per week for one semester
A general elective subject in all degree courses in engineering which introduces students to the practical application of the psychological skills used in understanding one's own experience and behaviour and the experience and behaviour of others. The course is designed to help students in both their professional careers and their private lives.
The course includes modules for understanding human behaviour, stress management, and aspects of communication.

Textbook

AB753 Literature and Media
Three hours per week for one semester
A general elective subject in all degree courses in engineering where the objective is in developing a skill in reading and viewing modern day literature, films and television.
The subject includes the following topics: "The book of the film" — a modern day phenomenon, Differentiating between fact and fiction in documentaries and case studies; Media and authority — the influence of public attitudes through mass media. Relationship between rising images and social change. Media images of countries, people and professions. Presentation of programs in one idiom, originally designed for another. Humor — and what constitutes national humour.

References
Consult with the lecturer in charge.

AB754 Sociology
Three hours per week for one semester
A general elective subject in all degree courses in engineering which is a general introduction to sociology aimed at providing the student with the tools to examine society in cross-section and over a period of time. It is a study of social structure and social action. This analysis of Australian society along with relevant comparisons made with other societies provides the student with a useful set of concepts and appropriate terminology.

References
Consult with the lecturer in charge.

AB755 Law in Society
Three hours per week for one semester
A general elective subject in all degree courses in engineering which explores the relationship between the law and the society it purports to serve. Part of this relationship involves the nexus between changes in social attitudes and behaviour and the implementation and enforcement of the law.
Reading guides are provided.

AB756 Technology and Society
Three hours per week for one semester
A general elective subject in all degree courses in engineering aimed at developing students' understanding and awareness of the interactions between technology and society. The course will explore, by means of case studies and other material, the social impacts of technology; the social, political and economic forces that shape our current technology, and examine the values and implications of various approaches to technology.

References
Consult with the lecturer in charge.

AB757 Archaeology
Three hours per week for one semester
A general elective subject in all degree courses in engineering which introduces students to the techniques and reasons for archaeology in a stimulating and practical manner.
The emphasis is on field-work done in conjunction with the Victorian Archaeological Survey and the local Aboriginal community. Students learn new skills or enhance their existing skills in photography, mapping, sketching, and the local community. The course will explore, by means of case studies and other material, the social impacts of technology, and examine the values and implications of various approaches to technology.

Reference

AB758 Philosophy
Three hours per week for one semester
A general elective subject in all degree courses in engineering. It is designed to develop skills in philosophical analysis and reasoning and encourage the application of these skills to contemporary issues relating to science and technology. Topics include metaphysics, doubt and certainty, scientific methods, ethics and aesthetics.

References
Consult with the lecturer in charge

AB951 Risk Psychology
One hour per week for one semester
A subject in the graduate diploma course in risk management. Introduction to necessary principles of psychology.
Skill psychology: principles of skill acquisition and learning, models of human behaviour in perceptual workload, arousal and fatigue effects. Individual behaviour in a risk situation: perception and understanding of risk, motivation, cognition, cognitive dissonance.

References
Selected papers and course notes.
AB952 Risk Social Science
One hour per week for one semester
A subject in the graduate diploma course in risk management.
Introduction to necessary principles of social science.
Principles of social and group behaviour; culture, power, group pressures, dynamics in organisations, group decision-making.
Group perceptions of, and reactions to risk; risky shift, polarisation, opposing groups.
References
Selected papers and course notes.

BS196 Introductory Law
Three hours per week for one semester
A first-year subject in the diploma course in building surveying, intended to enable students to understand the origins of law and the use of law in their personal, civic and business affairs.
The concept of law, sources of law, origin and development of common law and Australian law, hierarchy of courts, the branches of law and the place of business law. The doctrine of precedent. Statutory interpretation. Subordinate legislation. Studies of relevant case law and statutory material, nuisance and occupiers liability.

BS294 Managerial Economics
One hour per week for two semesters
A second-year subject in the degree course in mechanical engineering aimed at introducing basic concepts and principles of economics and applied in business decision-making.
Among the concepts to be examined are markets and resource allocation, demand analysis and forecasting, cost and output relationships, firms' objectives and pricing strategies, investment analysis, industry economics, the structure of Australian industry and the role of industry assistance.

Textbooks
Drages, J. and Hughes, S. Managerial Economics. Plm.: : McDonald and Evans, 1977

References
Heyne, P. The Economic Way of Thinking. 4th edn, Chicago: SRA, 1983

BS389 Financial Management
Three hours per week for one semester
A second-year subject in the diploma course in building surveying designed to develop in students an understanding of finance relevant to the profession of building surveying.

Reference

BS399 Administration 1
Three hours per week for one semester
A third-year subject in the diploma course in building surveying, which introduces students to organisation and management theory and to developing their understanding of relevant business organisations and ways of dealing with them.
Management and its environments.
Current management thought and its origin: scientific management, traditional organisational principles.
Bureaucracy, human relations management, systems theory.
Contingency theory and problems of management: planning strategy, organisational design, mechanistic and organic systems of management.

Reference

In pursuit of the second objective, attention is paid to one or more of the following matters relevant to practice:
(a) contracts for the provision of engineering services by practices and employees;
(b) agreements involving resort to arbitration as an alternative to the courts;
(c) property law concepts relevant to the practice of engineering, including the so-called intellectual property concepts applicable to patents, copyright, trademarks and industrial design;
(d) the consequences in civil law (the tort of negligence) for the careless provision of engineering services or advice;
(e) the comparative advantages and disadvantages of companies, partnerships, trusts and joint ventures as vehicles or entities for the practice of engineering.

Materials are provided to students and detailed references are referred to during tuition in this unit.

BS503 Managerial Economics
Three hours per week for one semester
A general elective subject in all degree courses in engineering. No prior knowledge of economics is assumed.
Consideration is given to those economic concepts and methods of analysis that bear directly on the management of a firm.
The topics covered are drawn from: markets and resource allocation; demand, production and costs; prices and profits; investment; decision making; industry economics; the structure of Australian industry; and the role of industry assistance.

Textbooks
Davies, J. and Hughes, S. Managerial Economics. Plm.: : McDonald and Evans, 1979

References
Heyne, P. The Economic Way of Thinking. 4th edn, Chicago: SRA, 1983

BS504 Contemporary Macroeconomics
Three hours per week for one semester
A general elective subject in all degree courses in engineering. No prior knowledge of economics is assumed.
The emphasis of this subject is to examine how the macro-economy functions and why problems such as inflation, unemployment and external debt occur. A general framework of macro-economic analysis is established and this framework is then applied to current macro-economic management of the Australian economy.

All topics are directed to current economic experience, and students are expected to master a set of concepts which will help them think about the wide range of economic factors that are present in the course:

Outlines
- Inflation
- Unemployment
- External debt
- Macroeconomic management

Materials are provided to students and detailed references are referred to during tuition in this unit.

Textbooks

BS400 Administration 2
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which introduces students to organisation and management theory and to developing their understanding of relevant business organisations and ways of dealing with them.
Management and its environments.
Current management thought and its origin: scientific management, traditional organisational principles.
Bureaucracy, human relations management, systems theory.
Contingency theory and problems of management: planning strategy, organisational design, mechanistic and organic systems of management.

Reference

In pursuit of the second objective, attention is paid to one or more of the following matters relevant to practice:
(a) contracts for the provision of engineering services by practices and employees;
(b) agreements involving resort to arbitration as an alternative to the courts;
(c) property law concepts relevant to the practice of engineering, including the so-called intellectual property concepts applicable to patents, copyright, trademarks and industrial design;
(d) the consequences in civil law (the tort of negligence) for the careless provision of engineering services or advice;
(e) the comparative advantages and disadvantages of companies, partnerships, trusts and joint ventures as vehicles or entities for the practice of engineering.

Materials are provided to students and detailed references are referred to during tuition in this unit.
Organisational behaviour: motivation, behaviour, modification, group dynamics, management style, organisational climate, managing planned change. Staffing and manpower planning. The effective and efficient organisation.

References

**BS498 Decision Analysis and Financial Management**

Two hours per week for one semester

An elective subject in the fourth year of the degree course in mechanical engineering, which involves consideration of approaches available for effective management of the economic resources of an organisation.

Topics covered will include understanding financial data, prediction of cash flow, forecasting methods, in all of which a primary emphasis will be placed on understanding the link between the financial data, short-run decisions and long-run investment decisions.

Throughout the unit emphasis is on problem definition, alternate solution approaches and interpretation and presentation of results. In addition, students will be introduced to computer based financial modelling packages.

**BS501 Accounting and Finance**

Three hours per week for one semester

A general elective subject in all degree courses in engineering which is designed to teach students to develop and integrate concepts and principles of accounting where they assist management decision-making and policy formulation within the business. No prior knowledge of accounting is assumed.

Objectives of this course are to give students a broad knowledge to communicate with executive business staff; understand the concepts behind any management decision; understand the link between the accounting and decision process.

The topics studied are drawn from the following:

(a) the nature of financial statements,
(b) the analysis of financial statements,
(c) cash management,
(d) cost data and short-run decision analysis,
(e) long-run investment decisions.

**References**

**BS502 Legal Studies**

Three hours per week for one semester

A general elective subject in all degree courses in engineering. Its objectives are as follows: firstly, to give students a general insight into an alternative discipline to that of engineering; secondly, to provide students with an appreciation of the legal aspects of an area of law relevant to the future practice of their profession.

In the pursuit of the initial objectives, topics covered will include the legal environment within which engineering and management activities are undertaken. The legal reasoning processes employed by practitioners are studied.

An appreciation of such matters should enable students to bridge the communication gap which often exists between the legal and scientific communities.

**BS625 Health and Safety Law**

One hour per week for one semester

A subject in the graduate diploma course in risk management.

Historical outline of the development of health and safety law and disciplines: common employer, contributory negligence and voluntary assumption of risk, voluntary non fit injury.

Common law principles in occupational, public and product health and safety, duty of care, standard of care, tests of negligence. Legal relationships involving employers, employees, manufacturers and suppliers, service providers, consumers and occupiers.

The role of law in the control of health and safety, critical evaluation of relevant statutes (e.g. OHS Act, auditor’s liability Act, Accident Compensation Act, Occupier’s Liability Act, Trade practices Act, 1986), regulation practices.

The role and standing of codes of practice and standards.

The role of the expert witness.

The liability for negligent mis-statement.

**References**
Mildred, R.H. The Expert Witness. 1st edn; London: Godwin, 1982

**BS791 Marketing and Innovation**

Three hours per week for one semester

A subject in the graduate diploma course in entrepreneurial studies. The discipline of marketing in the context of a business. It cannot be considered as a function, like production or finance. Rather it should be seen as the control dimension of the entire business. Such a radical concept requires a completely different approach to thinking about a business. The key objective of this unit is to enable students to view marketing and entrepreneurship as functions that should co-exist in organisations of all sizes and types.

This objective becomes ever more critical in the context of an entrepreneurial environment where new products, ideas and markets need to be approached from the point of view of their final result—the end user.

**Teaching method**

Emphasis is shared between theoretical considerations and practical problems. There are 15 x 3 hour classes involving lectures, films, case studies, tutorial exercises and class discussion.

**References**
Other references will be prescribed or supplied when appropriate in lectures.

**BS792 The Entrepreneur and the Law**

Three hours per week for one semester

A subject in the graduate diploma course in entrepreneurial studies. The purpose of this unit is to consider the legal environment facing the entrepreneur and in particular to:

(a) provide the graduate with an awareness as to how the law affects business activities in general;
(b) provide the graduate with an awareness as to how the law affects the steps involved in bringing an invention, original product or process from the stage of conception to that of full commercial utilisation;
(c) illustrate how the law can be used to best advantage in establishing a business and in protecting one’s proprietary rights, and how to avoid legal pitfalls. The subject will illustrate how the law both promotes and controls business activities, and how such factors can be provided for in the preparation of a business plan.

Instructional emphasis will be upon the practical use of the law. It is proposed to involve some outside specialists to impart their knowledge in some fields, and an emphasis will be placed on the workshop approach in teaching some topics, e.g. registering a trade mark, forming a company, registering a design, registering a patent, registering a business name, drafting agreements, etc.

**Textbook**

Class material booklet will be prepared by the course convenor.

**References**

**BS794 Legal Studies**

One hour per week for one semester

A subject in the graduate diploma course in risk management.

The nature of law, its historical origins, the institutional setting in which it is administered.

Common Law
Statutory Law
Liability (Tort and Contract)
BS795 Introduction to Financial Management
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies. The general objective of the unit is to provide students with an understanding of concepts and methods employed in accounting and finance that assist management in decision making, planning and control.

The unit will initially look at how accounting information can help a company achieve all its goals. One role of accounting is the measurement of performance, and it is in this area that the strengths and limitations of accounting information is discussed.

In particular, the unit will focus on:
- Accounting reports for performance evaluation and the assumptions implicit in their compilation.
- Financial performance evaluation.
- Profit planning and fund flow analysis.
- Forecasting, planning and control.
- Cost-volume-profit analysis.
- Discounted cash flow analysis.
- Working capital management.

Textbook

BS796 Finance and Capital
Three hours per week for one semester
Prerequisite: BS795 Introduction to Financial Management
A subject in the graduate diploma course in entrepreneurial studies. The objectives of the unit are:

- To develop the analytical skills of students with respect to the application of analytical techniques required to solve various problems in financial management.
- To focus on the venture capital practices in Australia and overseas and analyse the various sources of long and short-term finance available.

The methods used in venture capital decisions and the taxation implications are examined.

Textbook
Reference will be made to various textbooks and journal articles, combined with guest speakers for specific topics of interest.

CE113 Static Systems
Two hours per week for first semester and four hours per week for second semester
A first-year subject in all degree courses in engineering, designed to develop in students an understanding of the basic concepts of statics and to extend these concepts to the behaviour of loaded members, simple systems and structures.

Basic concepts: force and force components, loads, reactions, equilibrium, internal forces, determinacy, superposition. Applications to pin-jointed trusses, beams and simple frames. Shear force and bending moment diagrams.

Stress and strain: general load-deflection and stress-strain behaviour including elastic, plastic, strain hardening, brittle, non-linear and viscous behaviour. Hookes Law. Linear elastic parameters (EG and Poisson’s ratio).

Values for common building materials including metals, timber, rock, concrete, and common plastics. Common tests to measure properties.

Practical work: tests will be carried out on structural models, typical beams, trusses and columns.

BS7795 Introduction to Financial Management
Three hours per week for one semester
A subject in the graduate diploma course in entrepreneurial studies. The general objective of the unit is to provide students with an understanding of concepts and methods employed in accounting and finance that assist management in decision making, planning and control.

The unit will initially look at how accounting information can help a company achieve all its goals. One role of accounting is the measurement of performance, and it is in this area that the strengths and limitations of accounting information is discussed.

In particular, the unit will focus on:
- Accounting reports for performance evaluation and the assumptions implicit in their compilation.
- Financial performance evaluation.
- Profit planning and fund flow analysis.
- Forecasting, planning and control.
- Cost-volume-profit analysis.
- Discounted cash flow analysis.
- Working capital management.

Textbook

BS796 Finance and Capital
Three hours per week for one semester
Prerequisite: BS795 Introduction to Financial Management
A subject in the graduate diploma course in entrepreneurial studies. The objectives of the unit are:

- To develop the analytical skills of students with respect to the application of analytical techniques required to solve various problems in financial management.
- To focus on the venture capital practices in Australia and overseas and analyse the various sources of long and short-term finance available.

The methods used in venture capital decisions and the taxation implications are examined.

Textbook
Reference will be made to various textbooks and journal articles, combined with guest speakers for specific topics of interest.

CE113 Static Systems
Two hours per week for first semester and four hours per week for second semester
A first-year subject in all degree courses in engineering, designed to develop in students an understanding of the basic concepts of statics and to extend these concepts to the behaviour of loaded members, simple systems and structures.


Introduction to structural behaviour: structural types and their behaviour under load, treated in a descriptive way; stability; structural failures.

CE114 Applied Mechanics
Four hours per week for first semester and two hours per week for second semester
A first-year subject in the diploma course in building surveying designed to develop in students an understanding of the basic principles of mechanics and their application to the behaviour of loaded members and simple systems.

Basic concepts: force and force components, loads, reactions, equilibrium, internal forces, determinacy, superposition. Applications to pin-jointed trusses, beams and simple frames. Shear force and bending moment diagrams.

Stress and strain: general load-deflection and stress-strain behaviour including elastic, plastic, strain hardening, brittle, non-linear and viscous behaviour. Hookes Law. Linear elastic parameters (EG and Poisson’s ratio).

Values for common building materials including metals, timber, rock, concrete, and common plastics. Common tests to measure properties.

Practical work: tests will be carried out on structural models, typical beams, trusses and columns.

CE171 Building Practice
Three hours per week for two semesters
A first-year subject in the diploma course in building surveying, designed to provide students with practical experience in the various trades and practices used in the construction industry.

Practical work: in carpentry, joinery, welding, plumbing, brickwork and masonry, electrical trades, fabrication and construction techniques in timber, concrete and steel.

CE172 Building Structures 1
Four hours per week for two semesters
A first-year subject in the diploma course in building surveying, intended to develop in students an understanding of the principles of construction of single- and double-storey residential buildings and to develop students’ written and graphic communications skills and problem-solving abilities in this area.

The principles of construction of single- and double-storey residential buildings: basic structural systems, introduction to building trades, properties of materials used in domestic building (timber, plain and reinforced concrete, masonry).

Methods of fixing: mechanical fasteners, adhesives, timber joints. Domestic construction: details of foundations, footings, floors, walls, ceilings and linings, roofs, plastering, pointing, painting and decorating, builder’s hardware.

Regulations and codes governing residential construction. Drawing practice: sketches and finished drawings for a variety of domestic construction components and structures.

Written and verbal reports on selected topics relevant to the syllabus.

CE191 Statutory Control 1
Two hours per week for two semesters
A first-year subject in the diploma course in building surveying, intended to provide students with an understanding of the role and duties of a building surveyor and an introduction to acts and regulations. Administration and law: structure and operation of local government. The role of building surveyor and required skills. Statutory functions related to acts and regulations. Other responsibilities and liabilities.

The building surveyor as Manager including communication skills, office organisation, staff relationships, environment both physical and psychological and as educator.

Functions: liaison with other Council departments, public authorities and private enterprise. Comparison of building surveyor’s role as a Council Building Surveyor and a consultant in private practice. Acts and regulations: basic principles of the regulations including interpretation, method, how regulations are separated into parts, divisions and sections. Reference method. Definitions and basic principles of each part including recognition of major terms and related codes and standards. Other responsibilities and liabilities.

CE211 Structural Mechanics
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which develops in students an understanding of the principles of mechanics as applied to structures.

After completing the subject students should be competent to analyse statically determinate planar structures and statically indeterminate beams.
Faculty of Engineering

Stress and strain

Biaxial loading, principal stress, Mohr's circle for stress and strain relationships between stress and strain, St Venant's principle and stress concentrations

Performance of loaded members

Torsion: elastic and inelastic stresses and deflections for circular and thin-walled closed tube sections. Bending: internal actions, flexural stresses, shear centre, skewed bending, composite sections, inelastic bending, beam deflections (EI, moment area, virtual work)

Columns: short columns, long columns (Euler and secant equations)

Statically determinate structures: stability, determinant, compound structures, trusses, simple frames. Influence lines for beams

Statically indeterminate structures: compound beams, continuous beams (force and slope-deflection methods).

CE231 Hydraulics

Three hours per week for two semesters

A subject in the second year of the diploma course in civil engineering which introduces students to highway and traffic engineering. Includes: principles and types of jetties, area classification and rating, detail design, plotting procedures and plan layout. Design of weir, trunk, sluice, weir. Circulation and use of electronic distance measurement

Levelling: construction, use and adjustment of level types, bookkeeping and reduction of levels. Contour plotting, plotting and use of contour plans.

Theodolites: construction, use and adjustments of theodolites, traversing, distance measurement, setting out.

Computations: computer techniques and electronic calculator use. Computations relating to traverse reductions, missing parts determinants, subdivision of land, road intersections and areas of various figures.

Practical work: exercises related to all aspects of theory, in particular levelling and theodolite use.

CE241 Surveying

Two hours of theory per week for two semesters and three hours of practical work for twenty weeks

A subject in the second year of the degree course in civil engineering which enables students to use basic surveying and computation methods and instrumentation in engineering practice.

Surveying: principles and types of jetties, area classification and rating, detail design, plotting procedures and plan layout. Use of electronic distance measurement

Levelling: construction, use and adjustment of level types, bookkeeping and reduction of levels. Contour plotting, plotting and use of contour plans.

Theodolites: construction, use and adjustments of theodolites, traversing, distance measurement, setting out.

Computations: computer techniques and electronic calculator use. Computations relating to traverse reductions, missing parts determinants, subdivision of land, road intersections and areas of various figures. Circular surveying, setting out, using deflection angles and tangent offsets.

Practical work: exercises related to all aspects of theory, in particular levelling and theodolite use.

CE251 Structural Design

Four hours per week for two semesters

A subject in the second year of the degree course in civil engineering which introduces students to the concepts and essentials of structural design and develops students' understanding of the design of structural elements and simple civil engineering structures.

Basic studies: the design process, considerations affecting design, deflections, moment areas, stresses and strain, components, shape and size of structural elements, earthquake effects, seismic performance, and the use of computer programs for structural analysis.

Structural loads: types of loads, loading codes.

Reinforced concrete: elastic and ultimate strength theories for rectangular beams, one-way slabs, frame beams, columns, foundations.

Steel: properties, fabrication, erection, codes, structural elements and assemblies, tees, beams, columns, connections.
CE281 Geoscience
Three hours per week for two semesters
A subject in the second year of the degree course in civil engineering which aims to develop an understanding of the fundamental principles of geology and soil mechanics and to apply these to simple applications in engineering.

Geology
Significance of geology in civil engineering; principles of mineralogy, petrology and palaeontology; structural geology, including deformed rocks; geomorphology, including ground water; outline of Victorian mapping and determination of sequence of geological events.

Soil mechanics
General soil type, classification, compaction, soil stresses and chemistry. Soil hydraulics including permeability and flow nets; shear strength of sands and clays, Mohr's circle, direct shear and triaxial shear testing; earth pressure including active, passive and at rest, rigid and flexible walls.

CE282 Geomechanics 1
Four hours per week for one semester
A second-year subject in the diploma course in building surveying designed to provide a building surveyor with the necessary knowledge of geomechanics to enable him to perform his duties of inspection and approval of foundations and other earth works, properly.

Types of soil and rock:
Stresses in soils: geostatic, load induced, hydrostatic.
Strength of soils: behaviour of clays, sands and mixed soils.
Field and laboratory tests.


CE293 Statutory Control 2
Two hours per week for two semesters
A second-year subject in the Diploma in Building Surveying intended to give students an understanding of the major requirements and underlying principles in the Regulations and Acts pertaining to building control.

Administration and law: the Building Surveyor's role and legislative requirements; decision-making processes within his/her area of responsibility: the Building Surveyor as manager.

Functions: responsibilities, scope and effective organisation of duties and functions; origin and development of Acts and regulations; understanding of regulations; detailed principles and application of major regulation parts. Basic understanding of Building Control Acts, its function and major areas of work. Application of individual regulation parts to various building examples.

CE311 Structural Mechanics
Three hours per week for one semester
A subject in the third year of the degree course in civil engineering which aims to develop students' skills in the elastic analysis of statically indeterminate structures.

Statically indeterminate structures: elastic analysis of forces and deflections (virtual work, strain energy, moment distribution); approximate analysis.

Matrix analysis of structures: introduction to force and displacement methods.

Elastic stability: fundamentals; stability of members (columns, lateral buckling of beams, beam-columns); framed structures.

CE323 Urban Planning 1
Two hours per week for one semester
A third-year subject in the diploma course in building surveying, which introduces students to problems involved in planning development in urban and rural environments.

The planning process: the purpose of planning, historical development of urban settlements, sociological effects of the built environment. Administration of planning schemes.

Residential planning standards.

Basic surveys of planning, the use of remote sensing in urban planning.

Introduction to data bases for planning purposes.

CE331 Water Engineering
Three hours per week for one semester
A subject of the third-year degree course in civil engineering designed to teach students the application of hydraulic theory to practice and to introduce them to hydrological concepts.

Pipe systems: pressure conduits, pipe friction formulae, TEL, HGL concepts, equivalent pipes, branching systems, pipe networks, Hardy-Cross analysis, surges, pump and pipeline systems.

Hydrology: meteorological phenomena producing rainfall, measurement and analysis of rainfall, O-index, streamflow gauging, the runoff process, rainfall intensity-frequency-duration curves, the Rational formula, unit graphs.

Open channel flow: steady, non-uniform flow, specific energy, critical depth, gradually varied flow, control sections, venturi flumes.

CE341 Surveying
Five hours per week for one semester
A subject in the third year of the degree course in civil engineering which extends basic survey theory and shows how surveying is used in engineering projects.

Control surveys: trigonometrical and horizontal control surveys; introduction to map projections and the Australian map grid; precise surveys, traverse surveys.

Photogrammetry: introduction to the use of photogrammetry in engineering.

Engineering surveying: introduction to cadastral surveys; tacheometric and total station techniques for the introduction to the use of computers in terrain and detail plans; measurement and computerisation.

Practical work.

CE351 Structural Design
Six hours per week for one semester
Three hours per week for two semesters for part-time students (CE353)
A subject in the third year of the degree course civil engineering which extends students' knowledge of the principles of structural design in concrete and steel and gives them practice in the application of these principles.

Design theory (45 hours)
Design principles: planning and choice of structural type; stability, rigidity, economic considerations.

Concrete: material properties; mix design; limit states design in reinforced concrete.

Steel: properties; failures modes; elastic design of elements and assemblies; connection design.

Fabrication and economics of fabrication methods.

Design practice (45 hours)
Exercises in structural steel and reinforced concrete design.

Computer programs are used to assist the design process where appropriate.

CE352 Structural Design 2
Five hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to familiarise the student with the processes of design and checking of structural computations, with particular emphasis on codes of practice for metal structures.

The design of metal structures and the clauses in the codes of practice for metal structures.

Traffic engineering: design, analysis and presentation of results for 12 types of traffic surveys. Highway capacity, uncontrolled intersection capacity, saturation flow for signalised intersections. Design of their intersections. Human performance and vehicle characteristics.

Flexible pavements: principles and structural design, design of sprayed seal, design of asphalt mixes.
A third-year subject in the Diploma of Building Surveying, designed to develop students' understanding of the principles underlying building regulations and their underlying principles. Study of the Building Control Act and procedures. Statutory and control. Possible developments of the approval of permits (BADAC and Bains Reports).

**CE421 Planning**

Two hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which introduces students to the role of the engineer in urban and regional planning.

**CE422 Urban Planning 2**

Two hours per week for one semester
A final-year subject in the diploma course in building surveying, which further develops students' understanding of the planning process.

**CE431 Water Engineering**

Three hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which introduces students to water engineering practice. On completion of the course, students should be able to apply water engineering principles to the design of distribution and disposal systems, and should have an understanding of water quality criteria and treatment methods.

**CE441 Structural Mechanics**

Four hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which develops further students' understanding of the principles of mechanics and their applications to structural analysis. Plastic analysis: yield criteria (Tresca, von Mises); plastic theorems, collapse requirements; applications to framed structures, flat plates (yield line and strip methods).

**CE451 Structural Design**

Six hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which extends students' knowledge of the principles of structural design in steel, timber and concrete and gives students practice in the application of these principles.

**CE452 Structural Design 3**

Four hours per week for one semester
A final-year subject in the diploma course in building surveying designed to familiarise students with the relevant codes and practices for concrete and timber structures and to highlight important design requirements by considering selected case histories of structural failures.
CE474 Building Structures 4
Three hours per week for one semester
A final-year subject in the diploma of building surveying, designed to extend students' knowledge of structural behaviour and construction and demolition techniques, and to give them an appreciation of storm water drainage.

Subject: principles of structural action and methods of construction for precast and prefabricated structures, shells, folded plate structures, cable and membrane structures, air-inflated structures, high-rise post-tensioned structures, etc.

Crane and lifting devices.
Stormwater drainage: hydrology, surface and subsurface drainage, elements of hydrology, applications to roof and site drainage. Groundwater. Hydraulics of pressure conduits: total energy line, hydraulic grade line, energy components, graphical representation, pipe friction formulae, minor losses, pump selection.

CE475 Fire Engineering
Three hours per week for one semester
A fourth year subject in the diploma of building surveying, designed to give students an appreciation of fire engineering.

Performance of structural materials, structural members and structural systems under fire conditions.

Measures to provide elements and structures with fire resistance. Australian Fire Test Standards. Overseas tests and Standards.

Site inspection of fire damaged structures. Fire reports.

CE481 Geomechanics
Four hours per week for one semester
A subject in the fourth year of the degree course in civil engineering which enables students to investigate and design simple foundations considering both soil shear strength and settlement characteristics and which gives students an awareness of the various soil factors which control the stability of a given soil slope.

Settlement: soil stresses, consolidation, settlement.

Foundations: bearing capacity, shallow foundations (single, group, piled), deep foundations, settlement considerations.

Site investigation: planning, sampling methods, in-situ tests.

Stresses: cohesionless soils, cohesive soils, total and effective stress analysis, stability chart, residual strength.

CE482 Geomechanics 2
Three hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to extend students' knowledge further, in the area of geomechanics.

Compaction: compaction process, compaction plant, control of filled sites.

Foundation: bearing capacity, settlement, footing design with particular emphasis on residential and light industrial foundations.

Excavations and underpinning.

Site investigations: methods, reports and their interpretation.

Approval of foundations. Regulations. Responsibilities of various parties.

CE493 Building Law and Contracts
Three hours per week for one semester
A final-year subject in the diploma course in building surveying, which provides students with a suitable legal background for the proper discharge of their duties.


Contracts: types and conditions of contracts and tenders. Specifications.

CE505 Investigation Project
One hundred and fifteen hours over nineteen weeks
A subject in the fifth year of the degree course in civil engineering which 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 interest, or are proposed by cooperative employers, but can be suggested by students. They are chosen to develop students' technical knowledge, self-educational skills and initiative, and may be limited by available departmental resources.

Each project requires a literature survey, and a theoretical and/or experimental investigation. Results, conclusions and recommendations are presented in a written report, and an oral report may also be required.

CE511 Structural Mechanics
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends the analytic abilities of students in some important areas of modern structural mechanics.

Selected topics in structural mechanics such as:

- Finite difference methods: solutions for beams on elastic foundations, column buckling and plate-bending problems.
- Structural dynamics: free and forced vibrations for beams and framed structures.
- Structural modelling and approximate analysis: choice of appropriate analytical models, methods of approximate analysis for preliminary design and checking of computer solutions.

Emphasis will be given to the formulation of these problems for computer solution.

CE531 Water Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which develops further the design skills of students who have a particular interest in structural design.

Students undertake a selection of more advanced structural design projects, chosen to emphasize interpretation of current design codes and current design practices.
Faculty of Engineering

CE555  Civil Design
One hundred and thirty-five hours over nineteen weeks

A subject in the fifth year of the degree course in civil engineering, which is designed to develop further students' design skills.

Students undertake a range of design assignments, both structural and non-structural, chosen to develop students' abilities to apply theoretical knowledge developed in earlier years of the course to practical design situations, and to enhance their understanding of codes and regulations, 1 of which require creative solutions and Are used.

Students may be required to answer questions in the form of oral reports, written reports, design computations, drawings or models, as appropriate.

CE561  Transport Engineering
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which aims to ensure that all the important aspects of highway and traffic engineering, and civil engineering aspects of other modes of transport have been covered in the undergraduate course.

Freight transport: shipping, cargo containers, inland waterways, air transport, ore handling, belt conveyors, solids pipelines, freight terminals, capacity and selection of mode.

Passenger transport: fixed guide ways, APT, proposals, metro, airports, air traffic control, airport capacity, ferries, selection of mode.

Road engineering: flow models, applications of queueing theory, selection of traffic surveys, capacity and signal timing, freeway geometry, concrete pavements.

Transport planning and administration.

Revision and extension: Extensive or up-to-date aspects of topics nominally covered in CE261, CE361.

CE571  Construction
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which introduces students to construction projects and gives students a concept of cost of projects.


Civil engineering works: fundamental principles, construction methods, cost.

Building works: fundamental principles, construction methods, cost.

Industrial complex: introduction; multidi?rectional contruction; marine structure and off-shore works: fundamental principles, construction methods, cost.

CE581  Geomechanics
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which extends students' knowledge of soil and geomechanics, introduces them to rock mechanics, and gives students some appreciation of the high level of expertise and art required to practice in the area of geomechanics.

Earth pressure problems, braced excavations, tie-back walls and soil anchors, introductions to soil dynamics; introductions to rock mechanics; selected topics in soil engineering; further aspects of engineering geology.

CE592  Municipal Engineering
Three hours per week for one semester

An elective subject in the fifth year of the degree course in civil engineering which develops students' understanding of the function and operation of local government, and the ability to apply basic principles to the types of work typically carried out by municipal engineers.

Municipal engineering responsibilities include: sewer or water systems, roads and traffic, drainage, street design, road maintenance, parking requirements and control, property and equipment, solid waste, recreation, including consideration of financial planning and constraints.

Planning: aspects of planning and building control relevant to local government.

CE595  Professional Practices
Six hours per week for one semester

A subject in the fifth year of the degree course in civil engineering which is designed to acquaint students with a variety of engineering practices and to make them more aware of the role of engineers in society.

The engineer and society
Professional ethics; the role of the engineer in society; the effect of man on the environment.

Engineering contracts and contract management
Initiation of projects; contract law; forms of contracts; contract documents (form of tender, bonds, conditions of contract, specification schedule of quantities); tendering procedures; estimating; CPM; cash flow; cost control; construction documentation; claims; variation orders; partial and final certificates; arbitration.

Industrial relations
Company structures; trade unions; negotiations; arbitration and conciliation of labour disputes; man management; motivation; leadership; delegation of authority.

Economics
Cost-benefit analysis; discounted cash-flow; present worth criteria; buying or hire of plant.

Communications
Engineering technical reports; oral presentation of technical reports; letter writing; conduct of meetings.

CE670  Construction Technology
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which considers technological resources available in the execution of a construction project.

Planning of construction programs, resource allocation, plant and equipment, soil investigation and data interpretation, construction materials, trade skills, regulations.

CE690  Civil Engineering Project Control
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction which introduces the techniques for establishing and maintaining technical control of a civil engineering project.

General conditions of contract; forms of contract; drawings, specifications and quantities; estimating; scheduling and programming; quality control; documentation; work progress and costs; progress payment procedures; industrial safety.

CE691  Civil Engineering Management
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction designed to develop an awareness of efficient site management techniques.

Responsibilities of a project manager; responsibility of site engineer; construction site organisation; site office procedures; contractor's principal relations; arbitration; company structures; man management; negotiations; arbitration and conciliation.

CE692  Communications
Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction. 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 discussed.

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.
CE770 Construction Engineering
Four hours per week for two semesters
A subject in the graduate diploma course in civil engineering construction reviewing construction techniques for civil engineering projects. Construction techniques for highways, bridges, railways, airports, tunnels, pipelines, foundations, buildings, dams, water supply structures, sewerage.

CE771 Construction Project Control
Four hours per week for one semester
A subject in the graduate diploma course in civil engineering construction which introduces financial concepts that are important in evaluating projects, in financing projects, in financial control and in measuring productivity.

CE790 Financial Project Control
Four hours per week for one semester
A subject in the graduate diploma course in civil engineering construction which introduces financial concepts that are important in evaluating projects, in financing projects, in financial control and in measuring productivity.

CE775 Non-Newtonian Heat, Mass and Momentum Transfer
Three hours per week for two semesters
A subject in the graduate diploma course in chemical engineering. A review of Newtonian fluid flow, heat transfer and mixing (up to and including solutions to partial differential equations of continuity, momentum). The final aspect of the subject is the application of these concepts to some practical situations such as heat sterilization.

References

EA491 Biochemical Engineering
Three hours per week for two semesters
A subject in the graduate diploma course in chemical engineering. 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

EE187 Electronics, Circuits and Computing
Five hours per week for first semester and three hours per week for second semester

Sinusoidal circuit analysis: concepts of reactance, impedance, susceptance, admittance, Peak, r.m.s., and average values. Complex notation series and parallel combination of circuit elements.

Digital systems and microcomputers: binary and hexadecimal number systems. Arithmetic and logic operations. Concept of digital processing. Simple assembly language programs.

Analogue electronic circuits: operational amplifiers, frequency response, filters, feedback and time domain. Spectrum allocation.

Energy transfer and utilisation: power calculations, transformers, motors, power generation and distribution.

Computing: operating system familiarisation, test editor familiarisation, programming philosophy—PASCAL programming language.

Textbooks
Prentice-Hall.

EE255 Electrical Design and Computing
Four hours per week for first semester and three hours per week for second semester
A second-year subject in the degree course in Electrical & Electronic Engineering.

Electrical design
Introduction to electrical design: electrical, magnetic and physical properties of materials.

Coil design: series and shunt coils. Winding area, space factor, temperature rise and power dissipations. Project.


DC power supplies: transformers, rectifiers, regulators and IC regulators. Project.

Printed circuit board design: track sizing, standards, construction methods and software tools.

Amplifier design: BUT amplifiers, bias conditions and small signal model. Two stage amplifier design project.

Computing
PASCAL, advanced PASCAL, TURBO PASCAL, records, files, algorithms, internal storage, recursion, stack and queues, structures, introduction to data bases and amplifiers.

References
Corner, D.J. Modern Electronic Circuit Design. Reading, Massachussetts: Addison-Wesley, 1976

EE282 Communication Princioles
Four hours per week for one semester
A second-year subject in the degree course in electrical and electronic engineering.

General concepts: communication systems, spectral analysis, fundamentals of signal transmission.

Anologue Communications: amplitude modulation methods, angle modulation methods, stereo broadcast, receivers.

Digital Communications: pulse amplitude modulation, pulse coded modulation, RF digital modulation methods.

Multiplexing: TDM and FDM.

References
Haykin, S. An Introduction to Analog and Digital Communications. John Wiley and Sons, 1987
EE283  Electrical Circuits and Fields
Four hours per week for two semesters
A second-year subject in the degree course in electrical and electronic engineering.
Circuit elements, linear and non-linear.
Steady state circuit analysis: mesh and nodal analysis.
Circuit theorems.
Electrostatic field: Gauss Law, electric flux, displacement: Gauss theorem, Poisson and Laplace equations: methods of images; field plotting; calculation of capacitance for simple geometries; dielectrics, dipoles, polarisation, displacement current; forces in electrostatic systems.
Natural response of circuits: first and second order circuits; classical and Laplace methods.
Two part networks: parameters and interconnections.
Non-sinusoidal waveforms; Fourier analysis.
Network topology.
Electromagnetic fields; conduction; resistivity; current density and electric field in conductors; magnetic induction, magnetic flux and flux linkage; Ampere law, Stokes theorem, magnetic field intensity; mutual and self inductance, calculation of inductance and energy; forces in magnetostatic systems.
Analogous systems: analogies between electrical, mechanical, incompressible fluid and thermal systems.

References
Madhu, S. Linear Circuit Analysis. New Jersey: Prentice-Hall, 1988

EE286  Electrical Machines and Measurements
Four hours per week for two semesters
A second-year subject in the degree course in electrical and electronic engineering.
Introduction to electromechanical energy conversion: voltage-current, energy storage and ferroelectric transducers. Means of torque production.
Introduction to rotating machinery: construction and principles of operation of three-phase induction machines, direct current machines and synchronous machines.
Measurement principles. Definition of and analysis of experimental errors. Direct acting and electronic instruments for current, voltage resistance and power measurements; energy measurements. Oscilloscopes in measurement. Frequency, period and spectrum analysers.

References
Madhu, S. Linear Circuit Analysis. New Jersey: Prentice-Hall, 1988

EE357  Electrical Design
Three hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.
Digital hardware: design to objectives and specifications, working from block diagrams, schematic diagrams, information sources, IC packages, environmental considerations, interaction with PC board design, decoupling and shielding, analysis (system design). Software: circuit fault finding. Software development, design around operational amplifiers, effect of power supplies, transistors as power devices.
Software structure design: software specifications, structural programming, state diagrams, structured analysis, software reliability, software testing, procedural versus declarative programming.
General design topics: quality control and sampling, reliability, human computer interaction, man-to-machine interfacing.

References
Selected Australian, British, DEF (Aust) and MIL Standards
Plus others to be advised
EE383 Electromagnetic Fields
Two hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.
Static and quasistatic electric and magnetic fields: fields in materials; boundary conditions in dielectric, magnetic and conductive materials; solutions of boundary value problems by image methods, finite difference; multiple conductor systems, partial and total capacitance, self and mutual inductance.
Electromagnetic wave propagation: Maxwell equations, Helmholtz equations and solutions for perfect dielectric and ideal conductor, TEM plane waves, wave impedance, phase and group velocity, Poynting theorem and Poynting vector; plane wave penetration in good conductors; reflection and refraction of plane waves at boundaries between dielectric and dielectric, dielectric and conductive, lossless transmission lines, characteristic impedance, phase and group velocity, reflections at mismatched terminations and discontinuities in lines, impedance matching; TEM waves between parallel perfect conducting planes, introduction to wave guides.

References

EE385 Electrical Power and Machines
Five hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.
Introduction to power systems.
Transmission line parameters; line hardware and insulations; cables; symmetrical and unsymmetrical lines; parallel lines; line representation; circle diagram; power system representation; single line diagrams; per unit method; voltage regulation.
Three-phase transformers; transformer connections; harmonic phenomena; synchronous machines; steady state analysis; cylindrical rotor and salient pole characteristics; two axis theory; transient and subtransient reactances; the Thevenin and Thalas model; induction motor characteristics; induction motor analysis; damper winding performance; stator resistance starting and speed control.

References

EE387 Electronics and Communications
Five hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.
Analogue and digital systems: operational amplifiers; operational amplifier systems; non-ideal behaviour; circuits.

References

EE389 Linear Control System
Four hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.

References
Dorf, R. Modern Control Systems. 4th edn. Reading: Addison-Wesley, 1986

EE455 Electrical Design
Three hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.
Electromagnetic compatibility: interference sources and suppression, shielding, filtering, and earthing practices, interference standards and measurements.
Illumination engineering: principles of lighting quantities, luminance and illumination calculations, commercial and floodlighting designs. Computer aided design and optimisation: an overview of the use of computers in design including the use of graphics. Introduction to optimisation. Calculus techniques for unconstrained functions. Lagrange multiplier. Characteristic analysis; Basis for linear programming. Introduction to dynamic programming and simulation techniques.
Project work involving class seminars and written reports.

References

EE471 Operating Systems and Languages
Four hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.
Computer languages: sequence control, data control, storage management, introduction to translation, language selection for applications.
EE472 Software Engineering

Three hours per week for one semester

A four-year subject in the degree course in electrical and electronic engineering.

Software engineering: system programming techniques, input/output handling, return from interrupt processing.

References


Part B


EE473 Computer Electronics

Two hours per week for one semester

A four-year subject in the degree course in electrical and electronic engineering.

Digital systems design, basic machine organisation, control unit implementation, interrupts and asynchronous I/O processing.

References


EE474 Electrical Power and Machines

Five hours per week for one semester

A four-year subject in the degree course in electrical and electronic engineering.

Part A

Power systems


Part B

Electrical machines

Direct current machines: transient response, transfer functions. Single phase AC machines: induction motors,commutator motors, variable speed and variable frequency, synchronous motors, variable speed and D.C. magnet types; construction and operating characteristics. Linear induction motors: machine forms and characteristics.

Part C

Power electronics

Semiconductor devices for switching large currents. Characteristics and rating methods of the SCR, Triac, GTO, and power transistor. Characteristics of trigger devices such as the Programmable Unijunction Transistor. Turn on and turn off techniques, DC choppers. Power rectification: fully controlled and partly controlled single phase and three phase bridges; the interphase transformer. Regenerative braking. Inversion: introduction to the variable frequency inverter and its applications.

References

Part A


EE475 Electrical Power and Machines

Five hours per week for one semester

A four-year subject in the degree course in electrical and electronic engineering.

Digital electronics


References


EE477 Electronics and Communications

Five hours per week for one semester

A four-year subject in the degree course in electrical and electronic engineering. Analogue electronics: bipolar and CMOS analogue integrated circuits — current sources, voltage references, high gain stages, compensation, power stages.

Digital electronics


References

EE560 Design and Project

Two hundred and five hours over nineteen weeks

A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Systems engineering principles

Economic, environmental, and social aspects of design, cost-benefit analysis, design case studies.

Project work involving experimental, practical and presentation of written work. Student seminars on project to

References


EE561 Computer Systems Engineering

Six hours per week for one semester

A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Computing systems: interactive operations and implementation.

Architectures, advanced topics in computer architecture, system architecture, computer organisation, operating system.

References


EE562 Electronics

Four hours per week for one semester

A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Digital electronics: techniques for high speed digital circuits, electrical characteristics of IC logic, speed, interfacing, noise behaviour, grounding, line driving and receiving, line reflections, programmable logic devices, applications. Logic family characteristics, limitations and applications.

Analogue electronics: phase locked loops.

References


EE569 Control Systems

Two hours per week for one semester

A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Process control: elements of PID controllers, feedback and feedforward schemes, PLCs, process loop control, introduction to loadable control. Sampling and discrete data; nature of sampling as a modulation process. Data holds. Introduction to difference equations and Z transforms. Stability of discrete systems.

Digital control and data acquisition: outline of elements of digital based systems, application of sample and hold theory, interfacing techniques, microprocessor based systems, digital control algorithms.

References


References


EE570 Design and Project

Two hundred and five hours over nineteen weeks

A final-year subject in the computer systems engineering stream of the degree course in electrical and electronic engineering.

Systems engineering principles.

Economic, environmental, and social aspects of design, cost-benefit analysis, design case studies.

Project work involving design, experimentation, investigation, testing, and presentation of thesis. Student seminars on project topics.

References


EE575 Electrical Power and Machines

Six hours per week for one semester

A final-year subject in the electrical stream of the degree course in electrical and electronic engineering.


References


References


EE576  Electronics  
Four hours per week for one semester  

References  
Intel Microcontroller Handbook 1988, Intel Corporation. Santa Clara, CA  

EE577  Electronics  
Six hours per week for one semester  
A final-year subject in the electronics stream of the degree course in electrical and electronic engineering. Analogue electronics: non-linear circuits and applications, phase-locked loops and applications. Discrete component design of logic circuits. Digital electronics: single-chip and 8-bit microcomputers and applications; support logic and dependency notation, programmable logic devices, systematic design of digital systems; techniques for high speed complex logic.

References  

EE578  Communications  
Four hours per week for one semester  

References  
CCITT recommendations

EE579  Control Systems  
Two hours per week for one semester  
A final-year subject in the degree course in electrical and electronic engineering for students who have completed EE489 Control Systems. Sampling and discrete data: nature of sampling as a modulation process. Data holds. Introduction to difference equations and Z transforms. Stability of discrete data systems. Process control: survey of process control; PLC, process loop control, PID controller, variations to basic process loop. Digital control and data acquisition: outline of elements of digital-based system, applicability of sampling theory, interfacing techniques, microprocessor based systems.

References  

EE580  Computer Systems Engineering  
Three hours per week for one semester  
A final-year elective subject in the degree course in electrical and electronic engineering for students in the electrical and electronic engineering streams. Packaged computer user interface — standard features, facilities for custom packages; bulk storage devices, buses, input/output, interfaces, human interface; architectures and their characteristics; networking concepts and techniques; programming languages for dedicated computers; design of computer-based products.

References  
Somerville, I. Software Engineering. 3rd edn. Reading: Addison-Wesley, 1989  

EE581  High Voltage Systems  
Three hours per week for one semester  

References  
EE599 Control Systems
Three hours per week for one semester
A final-year elective subject in the electrical and electronic engineering stream of the degree course in electrical and electronic engineering. This subject is conducted jointly by the Department of Electrical and Electronic Engineering and the Department of Mathematics.

EE626 Computer Interfacing and Digital Electronics
Three hours per week for one semester
Aims: To introduce entry level students to the hardware and software of small computers, and their interface to external measurement and control equipment. Hands-on work is emphasised.

Prerequisites: Nil
A subject in the graduate diploma course in CAD/CAM.

Electronics: Digital signals, logic gates, flip flops, buffers, registers, and counters. Number systems: binary, hexadecimal, BCD, two's complement ASCII.
Programming: Introduction to a small computer, and to a high level language such as Pascal. Language constructs, use of language input and output manipulation.

Textbooks

EE631 Electrical Power and Electronics
Six hours per week for one semester

A student in the graduate diploma course in telecommunications systems management.

Electrical energy sources. Electrical circuit elements. AC and DC circuit theory and measurements.

Electrical power systems: commercial reticulated supply, three-phase systems and power; safety and hazards, protection of personnel and equipment; emergency power supplies, no-break systems, DC inverter. Energy measurements. Electricity tariffs.

Electronic devices: diode as rectifier, switch, simple logic device. LED, integrated circuit devices, systems and power; safety and hazards, protection of personnel and systems management.


Basic amplifiers: operational amplifiers, operational amplifiers, summer, integrators, reference course.

Electronic power supplies: half and full-wave rectification, filters, Zener diode regulators, electronic regulators.

References


EE632 Administrative Practice
Four hours per week for one semester

A student in the graduate diploma course in telecommunication systems management.


References

Committee of Inquiry into Telecommunications Services in Australia. Report of the Committee of Inquiry into Telecommunications Services in Australia. 3 Vols, Canberra: AGPS, 1982


EE633 Telecommunications Principles
Six hours per week for one semester

A student in the graduate diploma course in telecommunications system management.


Multiplex: frequency and time division multiplex. Introduction to digital communications: frequency shift keying. PSK, DPSK, QPSK.


Introduction to noise and its effect on communications.

Antennas and propagation: Free space propagation, Polarisation, Omnidirectional antennas, Directional antennas. Impedance matching, Transmission lines. VSWR.


References


EE641 Fundamentals of Computing
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering.

By the end of this unit the student should be able to: use the concepts of top-down design and modular programming; use the features of a good programming language; use a standard disk operating system. Top-down design process, algorithm specification, and structured programming. Definition and use of a good programming language (e.g., Pascal); Operating system services, file systems, process and system management. Translation, compilers, interpreters. Review of major languages and their applications.

References

Horowitz, E. Fundamentals of Programming Languages. 2nd edn, Rockville: Computer Science, 1984

EE642 Data Structures
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering.

By the end of this unit the student should be able to: use a variety of data structures, design and analyse algorithms to manipulate data structures, recognise common file and database schemes.

Data representations and structures, algorithms for operating on data structures, file systems, introduction to database systems.

References
Aho, A.V., Hopcroft, J.E. and Ullman, J.D. Data Structures and Algorithms, Addison-Wesley, 1983


EE643 Computer Systems Software
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering.

By the end of this unit the student should be able to: use the concepts of top-down design and modular programming; use the features of a good programming language; use a standard disk operating system. Top-down design process, algorithm specification, and structured programming. Definition and use of a good programming language (e.g., Pascal); Operating system services, file systems, process and system management. Translation, compilers, interpreters. Review of major languages and their applications.

References
Aho, A.V., Hopcroft, J.E. and Ullman, J.D. Data Structures and Algorithms, Addison-Wesley, 1983


EE644 Computer Systems Design
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering.

By the end of this unit the student should have gained a cross-disciplinary appreciation of some computer systems components.

Communication packages, Printers, file management, I/O devices and graphics packages such as: Communication packages, Printers, file management, I/O devices and graphics packages such as:

References

Calingaert, P. Assemblers, Compilers and a Program Translation. Computer Science Press, 1979

EE645  Semiconductor Electronics
Four hours per week for one semester
A subject in the graduate diploma in computer systems engineering.
By the end of this unit the student should be able to: analyse and
design simple analog and digital circuits and anticipate the electrical
behaviour of digital interfaces.
Semiconductor devices and their behaviour. Circuit theory applied
to logic circuits and their interfaces. Simple analog signal conditioning
circuits. Oscillators and timing circuits. Opto-electronics — display,
opto-compilers, fibre-optic links.

References
Hall International, 1984
Sedra, A.S. and Smith, K.C. Microelectronic Circuits. 2nd edn, New

EE646  Introduction to Digital Systems
Design
Four hours per week for one semester
A subject in the graduate diploma in computer systems engineering.
By the end of this unit the student should be able to: analyse simple
combinational and sequential systems; synthesise simple combina-
tional and sequential functions; perform functional testing on digital
systems hardware.
Combination/logic functions, notations and devices; arithmetic com-
ponents; sequential/logic functions, shift and free running counters,
time and frequency domain techniques, Control System
Design: introduction to cascade and feedback compensators. Trans-
ducers and Actuators: measurement of various physical quantities; types
of actuators and controllers.

References
Ercegovac, M.D., Lang, T, Digital Systems and Hardware/Firmware
Bodh, T.L. Introduction to Computer Engineering: Hardware and Soft-

EE647  Measurements and Control
Four hours per week for one semester
A subject in the graduate diploma in computer systems engineering.
Students will be expected to develop an understanding of the following:
the theoretical principles of feedback control systems; various math-
ematical techniques in modelling control systems and in their analysis;
various techniques and devices used in measuring and controlling
physical quantities present in systems.
Fundamental Control Theory: linear systems, feedback and stability.
Control Systems Performance: transient response, steady state errors.
Control Systems Analysis: mathematical models, transfer functions,
block diagram, time and frequency domain techniques, Control System
Design: introduction to cascade and feedback compensators. Trans-
ducers and Actuators: measurement of various physical quantities; types
of actuators and controllers.

References
Appropriate text books and publications relevant to each section.

EE731  Electronics
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems
management.
Introduction to microcomputers for on-line dedicated control and mon-
toring applications in telecommunications.
8085 based dedicated microcomputers, hardware and software.
Input/Output for microcomputers, analogue/digital interface,
communications.
Survey of available software support, memory devices, development
systems, and 816/35 bit processors.
Introduction to optoelectronics in telecommunications.
Telecommunications test equipment.

References
Bell, D.A. Electronics Instrumentation and Measurements. Reston, 1983
Cooper, W.D. Electronic Instrumentation and Measurement Techniques.
Frisquez, E, Jr. Getting Acquainted with Microcomputers. Indianapolis:
Sams, 1978
Hewlett-Packard. 1984 Electronic Instruments and Systems Catalogue:
Telecom Test Equipment. Available from Hewlett-Packard

Radio Shack. Understanding Optronics. Developed by T.I. Learning
Centre. Available through Tandy stores.

EE733  System Planning Control
Six hours per week for one semester
A subject in the graduate diploma course in telecommunication systems
management.
Introductory teletraffic engineering: basic traffic theory models.
Network protocols, ISDN, public data networks, AUSTPAC, DDN,
ISDN, communications systems design.
Ergonomics in choice of display, terminals, consoles and computer
layout.
Reliability: introduction to probabilistic reliability theory.
Redundancy, MTBF, Failure rate data.
Maintenance: preventive maintenance. Field modifications. Repair by
replacement.
Troubleshooting: Self-diagnostic systems.
Design for maintenance. Spares allocation policy.
Network control and supervision: automatic testing. Network control
procedures. Optimum routing.
Electromagnetic compatibility: source of EMI.
Control and suppression techniques: EMC measurements and standards.
Network analysis and scheduling: critical path networks. Job sched-
ing. Computer processing for CPU and job scheduling.

Technical documentation: interpretation of drawings.

Circuit diagrams, operational instructions and manuals.
Specifications and tendering: user requirements. Technical specifica-
tions. Turn-key projects.

References
Baker, D. Principles of Telecommunication— Traffic Engineering. 3rd
edn, Stevenage: Peregrinus, 1988
McCormick, E.J. Human Factors in Engineering and Design. 5th edn,
Selected Australia, British, DEF (Aust) and MIL Standards. CCITT
Standards.

EE734  Telecommunications Systems
Six hours per week for one semester
A subject in the graduate diploma course in telecommunication systems
management. Topics will be selected from the following:
Data transmission: computer interfacing. EIA and CCITT standards.
Modems. Line-conditioning. Switched and leased lines. Data system.
Buffering and concentrators. Routing network algorithms.
Error detection and correct: introduction to coding theory. Forward
acting EDC/ARQ systems.
Communications security: introduction to cryptography. Data
encryption. Voice scramblers. Digital secure voice systems.
Computer security.
Message switching: contention systems. Polling systems. Random
access techniques. Packet switching. Aloha techniques.
Specialised communication techniques: spread spectrum techniques.
Facsimile. Troposcatter systems. Fibre optic communications. Selective
calling systems.
Electronic navigation: direction finding. Primary and secondary radar.
Omega. Satellite navigation.
Satellite communications: polar and geo-stationary orbits. Spacecraft
stabilisation. Solar power supplies.
Space segment characteristics. Transponders. TWT amplifiers.
Multiple access. Downlink power budget. Earth segment
characteristics. Figaro of merit. Intelsat system. Australian domestic
satellite system.

References
Kuo, FF, ed.) Protocols and Techniques for Data Communication Net-
works. Englewood Cliffs; Prentice-Hall, 1981
Martin, J.T. Systems Analysis for Data Transmission. Englewood Cliffs:
Prentice-Hall, 1975
Martin, J.T. Telecommunications and the Computer.: 2nd edn, Engle-
wood Cliffs: Prentice-Hall, 1976
Schwartz, M. Computer Communication Network Design and Analysis.
Englewood Cliffs; Prentice-Hall, 1977
Schnellenberg, O.J. Radio and Electronic Navigation. 6th edn, London:
Newnes-Butterworths, 1988
Spilker, J.J. Digital Communications by Satellite. Englewood Cliffs: Prentice-
Hall. 1977
EE735 Elective Subject
A subject in the graduate diploma course in telecommunication systems management.

Technical elective or project appropriate to the student’s interest or employment, taken continuously for 3 weeks at end of semester.

Note: This time may be extended up to a maximum of 6 weeks to enable completion of projects or approved special electives.

EE741 Computer Systems and Software Engineering
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering. Students will be expected to develop an understanding of the following: the various computer architectures that exist today and their principal characteristics. The operation of a computer system and its peripherals with respect to its hardware. The principles of software engineering with respect to program specification, development, implementation and maintenance.


References
Appropriate text books and manufacturers publications relevant to each section.

EE742 Computer Communications and Control
Four hours per week for one semester

A subject in the graduate diploma course in computer systems engineering. Students will be expected to develop an understanding of the following: a variety of ways in which computers can be interfaced to the outside world and to each other, including analog, digital, parallel and serial interfacing; the principles of digital control systems and how they are implemented practically in process control.


References
Appropriate text books, manuals and vendor publications relevant to each section.

EE743 Computer System Case Studies
Four hours per week for one semester

A subject in the graduate diploma in computer systems engineering. By the end of this unit the student should be able to demonstrate detailed knowledge of some specialist computer system problems and show determination in pursuing unfamiliar problems. Topics such as the following will be included: computer accommodation and installation practice; human factors; work station design; reliability; performance standards; documentation; specification and tendering; maintenance contracts.

Emphasis will be given to the practical problems of specifying, designing, installing and maintaining real systems, and to applications of interesting new technology.

EE744 Design and Project
Four hours per week for one semester

A subject in the graduate diploma course in computer systems engineering. By the end of this unit the student should be able to implement and document a computer system design.

Faculty of Engineering

The student may choose any appropriate computer systems engineering project, subject to the convener’s approval. Emphasis is placed on successful completion of the project, to a specification agreed upon at commencement. Four projects are encouraged, in preparation for professional computer systems employment.

EE795 Introduction to Electrical Engineering
One hour per week for one semester


Reference

EE901 Computers and Interfacing
Three hours per week for one semester

A first-year subject for Master of Engineering (CIM). Small computers are emphasised, and their interfacing to the real world and to other computers. Microcomputers and microprocessors — architecture and hardware structure; methods of interfacing microcomputers and peripherals; software systems for microcomputers; networking; data acquisition, methods and devices.

References
Microprocessor Basics. Rochelle Parks Hayden, 1977
Sinnema & Gent, ISM 1982
EF197 Introduction to Engineering
One hour per week for two semesters plus fifteen hours in selected non-teaching periods

A first-year subject in all degree courses in engineering which provides an introduction to a professional engineer’s role and responsibility in the community, an appreciation of the roles and technical practice of members of the engineering workforce, and some practical experience in basic process skills.

Reference
The Institution of Engineers, Australia. Code of Ethics. IEng., 1981

EF611 Management Fundamentals
Four hours per week for one semester

A subject in the graduate diploma in management. 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 key elements of management — financial, human and organisational and legal — will be integrated within the study.

EF612 Engineering Management
Four hours per week for one semester

A subject in the graduate diploma in management. Management is a key element in all areas of engineering. This subject is directed at the elements of management as they particularly relate to project, site and plant management. As with other subjects within the course, the key elements of management — financial, human and organisational and legal — will be integrated within the study.
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.

**EF613 Industrial Engineering**

Four hours per week for one semester

A subject in the graduate diploma in management. Management is a key element in all areas of engineering. This subject looks at the elements of management particularly as they relate to production and manufacture management.

Human organisational aspects considered within the subject will include process and operation planning and analysis, systems design, control systems for inventory, production, quality, reliability, cost, budget, etc. Valuation analysis, method study and work measurement, time standards, ergonomics, job design, safety measures. Physical elements of location and layout of plant and office will be included and probability and statistics will form an important element of the subject.

**EF614 Management Practice 1**

Four hours per week for one semester

A subject in the graduate diploma course in management. The core of this subject will be business strategy setting objectives, measurement of performance, introduction to the marketing function, sales, market research, segmentation, etc. Innovation and entrepreneurial aspects are included.

Human aspects will include creative and lateral thinking, technical communications skills, supervision and leadership, project teams and task forces, motivation and problem analysis, problem solving and decision-making.

Financial aspects will consider budgets, management reporting systems. Cost estimating, product costing and pricing.

Legal aspects will concentrate on elements of commercial, criminal and tort law as they affect manufacturers, and concepts of industrial property (patents etc.) will be introduced.

**EF620 Human Aspects**

Two hours per week for one semester

A subject in the graduate diploma course in management. This subject is designed to build upon the introductory work in the first semester and treat the material with more depth and practicality.

Topics covered include:

- Theoretical base: interpersonal relationship and individual development; individual difference, 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 appraisal systems, WSC, SIT, STR, T and financial SC measurement.

- 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**

Three hours per week for one semester

A subject in the graduate diploma course in management. This subject is designed to build upon the introductory work of the first semester and treat these elements in more depth. Topics include:

- Finance: financial statements; structure, analysis and interpretation of Manufacturing Account, Trading Account, Profit and Loss Account and Balance Sheet, Management accounting and monthly reporting, variance analysis, Raums, ratios and fund statements, Company taxation, depreciation allowances, Statutory returns. Sales tax, duties;

- Sources of finance, means of funding, leasing, hire purchase, overdraft, bank loans. Venture capital. Fixed capital, working capital, cash flow;


**EF622 Engineering Management 2**

Two hours per week for one semester

A subject in the graduate diploma in management. An advanced study of the management of design, research, development and maintenance of projects, constructions, communications, etc. It will include presentations on the managerial competence required in the specialised areas of engineering, planning and control, productivity and measurement of performance in the various functional areas of engineering.

**EF623 Marketing**

Three hours per week for one semester

A subject in the graduate diploma in management. The subject will explore general concepts of marketing and its key place in business strategy.

Marketing function: sales market development, product development, market research, advertising, etc.

Marketing Practice: environment, types of market, segmentation and targeting. Buyer behaviour, market measurement and forecasting.

Marketing planning. Competitive strategies; product life-cycle; new product development. Price decisions, marketing channels, distribution, sales force, advertising and promotion.

**EF624 Management Practice 2**

Six hours per week for one semester

A subject in the graduate diploma in management. 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 planning and decision making, management, structure and organisation; leadership, managerial effectiveness and motivation; financial control. The importance of entrepreneurial aspects of business, innovation and time management are emphasised. Extensive use is made of case studies, group discussions, lectures, and management games.

Present management practices both local and overseas, and likely future trends are discussed.

Practical aspects of marketing strategy are covered together with marketing case studies.

**EF625 Computing — Business Applications and Systems**

Two hours per week for one semester

A subject in the graduate diploma course in management.

The subject addresses management applications, and the management of computing. It will include Financial Packages for Budgeting and Management Accounting, Administrative applications, Database Management and applications; Office Automation: Spreadsheets, Word and Document Processing, Desk Top Publishing, Graphics and presentation packages. Electronic Office: networks, electronic mail, facsimile, telex, etc.

Decision support packages — mathematical tools relevant to management and some packages relevant to the manufacturing process will be considered.

**EF626 Computing — Engineering Applications and Systems**

Two hours per week for one semester

A subject in the graduate diploma in management.

I subje seeks to extend the student’s knowledge of engineering oriented applications, their management, and their integration 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.
EF627 Risk Management
Two hours per week for one semester
A subject in the graduate diploma course in management.
Concept and definition of risk management, organisational and risk management objectives. An overview of risk management models: the process model, assets, vulnerabilities, exposure and threat model; functions and activities models.
Systemic risk control and risk management systems, organisational and national structure for risk management, crisis management, assessment of organisational effectiveness.

EF628 Entrepreneurial and Technology Management
Two hours per week for one semester
A subject in the graduate diploma course in management. The innovation process: the elements of technological development of an invention to a commercial product. Evaluation of potential innovation. Research Methodology. Marketing and Innovation. Marketing as the control dimension of the entire business. The Business Plan: the general principles of a business plan - raising funds, project planning, market research and distribution, feedback from market, testing and building the entrepreneurial team and planning the operation of a business.

EF629 Sales Management
Two hours per week for one semester

EF630 Manufacturing Management
Two hours per week for one semester
A subject in the course in management. 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.

EF631 Physical Distribution Management
Two hours per week for one semester
A subject in the graduate diploma in management. Topics relating to the design and location of physical distribution of products from the point of production to the point of sale. Organisation of the physical distribution function, warehousing and storage systems, transportation.

EF632 Corporate Communications
Two hours per week for one semester
A subject in the graduate diploma in management. The objective of the organisation's communication; the need and development of cost-effective strategies to meet those needs. This includes communications audit, and an appropriate mix of communications media to minimise the cost of communications within the organisation and externally.

EF633 Energy Management
Two hours per week for one semester
A subject in the graduate diploma in management. An introduction to 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 energy use strategies.

EF634 Civil Engineering Management
Two hours per week for one semester
A subject in the graduate diploma in management. This subject is particularly directed towards development of an awareness of efficient site management techniques. Responsibilities of Project Manager and Site Engineer. Construction site organisation. Site office: Procurement - contractor: Principal Relations, Arbitration and Conciliation.

EF635 Construction Technology
Two hours per week for one semester
A subject in the graduate diploma in management. Project Management: the general principles of project management. Planning of construction programs: hazards, local factors, work 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.

EF636 Property and Production Risk Management
Two hours per week for one semester
A subject in the graduate diploma in management. Risk Forecasting: loss estimate methods overview - purposes and utility; fire and explosion, controlled and uncontrolled loss, mapping, insurance criteria. Machinery breakdown, the role and use of flow charting and critical path analysis. Historical and predictive methods, the role of databases and fault tree analysis. Threat and vulnerability model. Miscellaneous perils, flood, windstorm, hail etc. Property Insurance: purpose, definitions and concepts, Brief history. Levels and limits of cover, deductibles, reinsurance, self insurance. Business Interruption, construction exclusions. Role of parties, insured, agent or broker, insurer and reinsurer, government. Risk and Maintenance Financing: financial models. Relationship between risk and maintenance, Ferrotechnology, life cycle costing including the cost of risk.

EF637 Health and Safety Management
Two hours per week for one semester

EF638 Maintenance Management
Two hours per week for one semester
A subject in the graduate diploma in management. This subject is concerned with Maintenance Management and Maintenance Operations. The application of strategic planning to the maintenance operation, derivation of maintenance objectives and issues of cost. Requisition and motivation, Maintenance strategies and types of maintenance and procedure are considered. Maintenance Management Tools and Information Systems are studied.
EF640 Project
Six hours per week for one semester.

A subject in the graduate diploma in management.
Projects will form a major part of the final (full-time) semester's work.
Students will undertake aspects of the project work throughout the semester, emphasizing the integrated nature of the content of other subjects in the curriculum.
There will be three major elements to the projects:
- a team based case study requiring analysis, judgement and decisions concerning a business situation or engineering project;
- preparation of a business plan and team presentation;
- individual research of an agreed aspect of modern management, preparation of a research paper and, at the option of the convener, oral presentation of the findings.

EF700 The Business Plan
Ninety hours over two semesters.

A subject in the second year of the graduate diploma in entrepreneurial studies.

Normally, students undertaking this subject must have satisfactorily completed all first year subjects and be undertaking the standard second year program.

This unit aims to provide the entrepreneur with an appreciation of a business plan in raising venture capital, defining the potential risk and return, assessing whether 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, the teams will work independently and will be tutored by specialist consultants. Some client based consultants will also be available for the development of presentation skills.

Textbook

References
As advised during the course.

EF920 Managing the Growing Business
Sixty hours over two semesters.

A subject in the master of innovation program.

The unit aims to help the student with an understanding of the life cycle of an organisation and the management techniques required to effectively lead an organisation through the various stages of its life. Topics include:

1. Starting up: the struggle for survival; cash crises; developing a first product; dealing with large competitors; struggle or declare bankruptcy; sustaining success.
2. Early growth: profits and growth; speed of company growth; need for planning; leadership crises; entrepreneurial manager; management transition; accounting and control systems; multi-site operation.
3. Sustaining the growth: new product development; developing the second product and the management team; growth strategies.

Textbook

EF921 Financing Entrepreneurial Ventures
Sixty hours over two semesters.

A subject in the master of innovation program.

This unit aims to provide the graduate with a sound understanding of the methods of opportunity for and implications of various forms of finance for an enterprise. Topics include:

- evaluating opportunities: business plans; franchising; seeking, assessing and acquiring resources: searching for financial resources, valuing existing business; leveraged buyout; legal forms of organisation; valuation, bidding, partners; securities, law and private financing; share market options; venture capital;
- managing and harvesting the venture: initial public offering; partner-investor relations; takeovers; bankruptcy.

References

EF922 Entrepreneurial Project I
Sixty hours over two semesters.

A subject in the master of innovation program.

This unit is taught in conjunction with Stage 2 of the Victorian Enterprise Workshop with teams developing a real time start-up of a new business. This project will require a very substantial time commitment outside the formal class contact time.

References

EF930 Innovation and New Ventures
Sixty hours over two semesters.

A subject in the master of innovation program.

This unit will provide the student with a sound understanding of the elements required to translate an untried idea or innovation into a sound business activity. Topics include:

- screening opportunities and evaluating risk: the unexpected, the unchangeable need on one needs; change in industry systems and organisational structure; understanding new knowledge; technological life cycles; product innovation process innovation; market processes.

New Ventures: market focus; market niche; financial reality; management team.

References

EF931 Entrepreneurship in Corporations
Sixty hours over two semesters.

A subject in the master of innovation program.

Students will consider in depth the particular aspects of innovation within an existing organisation. Topics include:

- developing an innovative climate;
- corporate venturing process: systems overview, strategic options, selecting opportunities;
- managing new ventures: business plan, management structures, growth of new venture;
- financing new ventures;
- rewarding innovative staff.

References
EF932 Entrepreneurial Project II
Sixty hours over two semesters
A subject in the master of innovation program.
This unit is undertaken in conjunction with Stage 2 of the Victorian Enterprise Workshop. In this project, teams will develop a 'real life' product or service within a large corporation. The project will require a very substantial time commitment outside the formal class contact time indicated.

References

ME126 Energy Systems
Two hours per week for first semester and four hours per week for second semester, including lectures, tutorials and laboratory work

Mechanics of materials
One-and-a-half hours per week for two semesters.

Mechanical engineering
A second year subject in the degree course in mechanical engineering consisting of two parts; mechanics of materials and dynamics of machines.

ME212 Applied Mechanics
Three-and-a-half hours per week for two semesters, including lectures, laboratory and tutorial work.

Mechanics of fluids
A second year subject in the degree course in mechanical engineering.

ME213 Fluid Mechanics
A second-year subject in the degree course in manufacturing engineering.

ME214 Solid Mechanics
A second year subject in the degree course in manufacturing engineering.

ME215 Dynamics and Kinematics
A second year subject in the degree course in manufacturing engineering.


ME222 Energy Systems
Three-and-a-half hours per week for two semesters

A second-year subject in the degree course in mechanical engineering which establishes the principles of energy conversion and fluid flow. This subject comprises:

- Thermodynamics — two hours per week for two semesters.
- Fluid mechanics — one-and-a-half hours per week for two semesters.

The second law of thermodynamics and corollaries. Entropy and
Thermodynamics - two hours per week for two semesters.

Textbooks
- Enthalpy-Entropy Diagram for Steam.
- Various Codes of Practices and Standards as recommended by lecturers.

ME232 Electronics and Measurement Systems
Two hours per week for two semesters

A second-year subject in the degree course in mechanical engineering. The subject is taken in two parts: electronics, and instrumentation and measurement systems, both of which run for two hours per week for one semester.

Electronics
A continuation of the first-year subject EE167 Electronics, Circuits and Computing.
The syllabus deals with digital electronics and microcomputers. Basic digital devices — logic gates, combining logic gates; flip flops and latches; multiplexes and demultiplexes; semiconductor memories; introduction to microcomputers; simplified microcomputer operation.

Linear amplifiers — introduction to BJTs, amplifiers; characteristics of amplifiers; input/output resistances; multistage amplifiers; cascading; operational amplifiers; TRANSDUCERS — active and passive transducers; thermocouple, piezo-electric, photoelectric, optical; resistive, capacitive, inductive. Communications — modulation — amplitude, frequency and pulse code. Motors — DC motors, AC motors and AC/DC motors.

ME242 Ergonomics
Two hours per week for two semesters including lectures, laboratory and tutorial work.

A second-year subject in the mechanical engineering degree course. It involves study of the characteristics, development and evaluation of people, machine, environment systems. Review of research concerned with the effects of sound, light, heat, exertion and accelerations on work output and health.

References

ME261 Mechanical Practices
Three hours per week for two semesters, including lectures, workshop practices and industrial visits.

A second-year subject in the degree course in mechanical engineering in which the student will gain an appreciation of the trade, technician and drafting infrastructure within Australian industry and its relationship with professional mechanical engineering.

Trade/Technician training: introduction and development of elementary skills with completion of "hands-on" practical work in machine shops, welding and electrical electronic circuits.

Mechanical Practice:
Development of further skills using industry-standard computer-aided drafting with 'hands on' practical work applied to mechanical components and assemblies. Investigation of practical consumer and industrial mechanical equipment, using suitable assembly, disassembly and reporting on the characteristics of the equipment.

Industrial Preparation and Visits:
Consolidate the appreciation of trade and technician skills via selected technical tours showing the importance of such skills in a diverse range of mechanical engineering applications.

Prepare students for "ME 301 Industrial Experience" via lectures introducing industrial relations, occupational safety and personal health.

ME269 Building Services
Three hours per week for first semester and two hours per week for second semester

A second-year subject in the diploma course in building surveying, intended to extend students' understanding of the services relevant to building.

Air-conditioning: basic principles of human comfort requirements and of equipment used to achieve these. The building and human load. Insulation. Smoke control. ASHRAE. Special services: including fuel services, garbage disposal. Fuel services, garbage disposal, security. Provisions for controls, adjustments, inspections and maintenance.


References

Relevant Australian and Victorian Standards and Codes.
ME271 Design for Industry
Three hours per week for two semesters, including lectures and practical work
A second-year subject in the degree course in mechanical engineering.
This course is designed to introduce students to mechanical engineer-
ing design and to develop abilities of engineering analysis and syn-
thesis of components, and elementary systems.
Graphical techniques and applications. Introduction to computer aided
design packages, design methodology, creativity, modelling of design
systems, design components, features and application of mech-
anical components, simple systems selection, analysis and specifica-
tion, static and fatigue failure, Australian standards and codes, com-
munication of design concepts by the use of drawings, sketches, parts
list, specifications and technical reports.
References
Deutschman, A.D., Michels, W.J., and Wilson, C.E., Machine Design —
Juvinal, R.C., Fundamentals of Machine Component Design. New York:
John Wiley & Sons, 1983
Shigley, J.E., Mechanical Engineering Design. 1st metric edn, New York:
McGraw-Hill, 1996

ME312 Mechanics of Materials
Two hours per week for one semester
A third-year subject in the degree course in mechanical engineering.
Statically determinate structures; stress and members; deflec-
tion by integration, area and the superposition; Redundant
support and reactions. Strain energy methods and Castigliano's
theorems; slope-deflection equations and moment distribution in
beams and frames. Membrane stresses in thin shells and pressure
vessels. Twisting of circular rings by distributed couples. Elastic stability
and column action; concentric and eccentric loading, short and inter-
mediate columns.
References
Timoshenko, S.M., and Gere, J.M., Mechanics of Materials, 2nd edn,
Boston: PWS, Engineering, 1987
1985

ME319 Applied Mechanics
Three hours per week for one semester, including lectures, laboratory and tutorial work
A third-year subject in the degree course in manufacturing engineering with an emphasis on aspects of solid mechanics and dynamics relevant to studies in design, technology and systems engineering.
Machines
Introduction to vibrations (1 degree of freedom), energy method, fre-
quency response; multi-degree of freedom, Dunkerley, Rayleigh and
Holzer methods; balancing and whirling; mechanisms.
Solid mechanics
Theories of elastic failure, unsymmetrical bending, plasticity, experi-
mental stress analysis.
References
Timoshenko, S.P., and Gere, J.M., Mechanics of Materials, 2nd edn,
California: Brooks/Cole, 1984

ME322 Energy Systems
Four hours per week for one semester
A third-year subject in the degree course in mechanical engineering
which provides a foundation in the physical laws governing thermal
energy transfer and fluid dynamics.
This subject comprises:
Thermodynamics — three hours per week for one semester
Fluid mechanics — one hour per week for one semester
Dimensional analysis and similarity. Convective heat transfer. Radia-
tion. Combustion. I.G. engine characteristics. Laminar and turbulent
flow.

Textbooks
As for ME222

ME329 Fluid Mechanics
Three hours per week for first semester, including lectures and laboratory/tutorial work
A third-year subject in the degree course in manufacturing engineering.
This subject provides a study of fluid mechanics appropriate to the
chemical engineering stream of manufacturing engineering.
Review of fluid properties; fluid statics and dynamics; measuring
devices; boundary layer concepts; flow and pressure drop in pipes.
Valve characteristics; piping systems; characteristics of pumps and
fans, effect of blade orientation; cavitation. Net positive suction head;
positive effect of blade orientation, cavitation. Net positive suction
head; positive displacement machines; methods of control.
References
Cousson, J.M., Richardson, J.F, and Backhurst, J.R., ChemicalEngine-
ing (St Units), Vol. 1, 3rd edn, Oxford: Pergamon, 1976
London: Pitman, 1984

ME332 Machines and Controls
Four hours per week for one semester, including lectures, and laboratory/tutorial work
A third-year subject in the degree course in mechanical engineering
designed to foster students' ability to apply basic principles of me-
echanics to the analysis of engineering systems.
The course is in two equal parts:
Mechanisms and machines
Constrained relative motion and the kinematic analysis and synthesis
of mechanisms and machines, including gearing, clutches and linkages.
Static force analysis. Kinetic analysis; rotating and reciprocating
balance. Inertia effects in reciprocating machines and periodic forcing.
Fourier analysis and harmonic coefficients.
Dynamics and controls
Mathematical modelling of engineering physical systems: representa-
tion of components and systems by block diagrams. Application of the
Laplace transform and transfer function H(s). Transient response and
initial conditions. Inverse transform and time domain response, steady
state error. Poles and zeros of H(s), characteristic equation. S plane,
stability and root locus. Harmonic response H(jw), amplitude and
phase, representation by Bode and Nyquist plots, Applications to lower
order linear systems.
References
Hannah, J., and Stephens, R.C., Mechanics of Machines: Elementary
Palm, W.J., Modeling, Analysis and Control of Dynamic Systems. New
York: Wiley, 1983

ME342 Ergonomics
Three hours per week for one semester, including lectures, laboratory and tutorial work
This subject covers vigilance theory; decision-making, memory, design
and evaluation of workplaces, hazard and risk assessment, loss control
management, factors influencing industrial safety and safety
management.
References
Wickers, C.D., Engineering Psychology and Human Performance. Ohio:
Merrill, 1984
Various Government, Industry Association and Union Publications.
ME371 Design for Industry
Three hours per week for one semester, including lectures, projects and tutorial work.

A second-year subject in the degree course in mechanical engineering in which the student will become more competent in the design and commissioning of mechanical engineering systems with appropriate project management.

Mechanical Systems:
Prime movers, diesel engines, internal combustion of the cycle, power transmission systems using shafts, components, specific loads, power and torque demands. Synthesis and analysis of simple and complex loop mechanical systems, selection of commercial components and subsystems. Selection criteria, optimisation and specifications, machine frames and bases.

Fluid Power Systems:
Hydraulic and pneumatic components and systems. Circuitry and components. System analysis.

Mechanical Design Analysis:
Fatigue analysis of shafting, pressurised vessel design to Australian standards. Lifting equipment and materials handling systems. Introduction to reliability and scheduling concepts. Computer design techniques.

Textbooks

Rohner, P. Industrial Hydraulic Control. 2nd edn, Melbourne: Educa Press, 1986

ME412 Mechanics of Materials
Two hours per week for one semester.


References

ME422 Energy Systems
Four hours per week for one semester.

A fourth-year subject in the degree course in mechanical engineering. The course is in two equal parts — thermodynamics and fluid phases, with emphasis on the development and understanding of the physical laws governing energy transfer and conversion. The course will also deal with the logical design of established and developing plant and equipment. Gas and vapour flow in nozzles and diffusers. The shock wave theory. Internal analysis of turbo-expanders and compressors. Mixtures, psychrometry, air-conditioning and cooling towers. Rotodynamic machinery external and internal characteristics; system matching. Fluid drag. Momentum and thermal boundary layers. Wake flow.

Textbooks
As for ME222

References
Shapiro, A.H. Shape and Flow. London: Heinemann, 1970

ME432 Machines and Controls
Four hours per week for one semester, including lectures and laboratory/tutorial work.

A fourth-year subject in the degree course in mechanical engineering. The course is in two equal parts.

Dynamics
Vibrations of systems with multiple degrees of freedom. Review of damped forced vibrations, transient vibrations, transmissibility of force and motion, vibration isolation. Modes, modal fractions, principal coordinates and coupling, tuned absorbers.
Torsional vibrations, equivalent systems. Discrete models of physical systems, analysis by matrix methods, concept of modal analysis for linear systems and structures.

Industrial controls
Analysis and design of single variable and of arbitrary order by classical methods. Open loop control functions, steady state error and stability criteria. Performance criteria: system design and compensation techniques. Analysis and design of linear servo systems and regulators.
State space techniques: state variables and equations of state, relationship to the transfer function and system stability. Polynomial approximations to forcing functions, Leverrier algorithm and the transition matrix.

References
Rao, S.S. Mechanical Vibrations. Reading: Addison-Wesley, 1986

ME442 Ergonomics
Three hours per week for one semester, including lectures, laboratory and tutorial work.

Coursework in this subject covers information theory, psychophysics, signal detection theory, choice reaction time, skills and task analysis, job analysis and redesign, industrial motivation, work satisfaction, industrial democracy, employee specification and training, influence of organisational structure, factors influencing interpersonal communication, credibility, power and leadership.

References
Wickens, C.D. Engineering Psychology and Human Performance. Ohio: Merrill, 1984

ME451 Technical Planning and Sales Engineering
Two hours per week for one semester, including lectures, laboratory and tutorial work.

An elective subject in the fourth year of the degree course in mechanical engineering designed to introduce the student to marketing and sales, within a local business organisation. Fundamentals of marketing and consumer behaviour, buying processes, technical planning associated with sales. Particular emphasis on technical communication skills for both sales and internal engineering management purposes. Advanced applications and techniques of traditional technical planning.

References
Baylis, J.S. Marketing for Engineers. London: Peregrinus Ltd., 1985
ME461 Engineering Plant and Equipment
Two hours per week for one semester, including lectures, laboratory and tutorial work, with site visit(s) to industry as appropriate.

A fourth-year elective subject in the degree course in mechanical engineering.

This course involves the formation and operation of complex mechanical engineering plant systems composed of machinery, control and interfacing sub-systems. Practical mechanical systems are considered for a wide range of Australian industrial conditions. The performance, monitoring, improvement and management of systems are covered throughout the life cycles of the systems.

References
Colla, J.R., Mechanical Fault Diagnosis and Condition Monitoring. London: Chapman-Hall, 1977
Patton, J.D. Maintainability and Management. N.C., Instrument Society of America, 1980
Proper and Economical Use of Plant. Technical Bulletin No. 34, Melbourne. Road Construction Authority, 1986

ME471 Design for Industry
Three hours per week for one semester, including lectures, project and tutorial work.

A fourth-year subject in the degree course in mechanical engineering designed to improve the students’ ability to specify engineering objectives, design original equipment and select commercial equipment to form complex engineering systems, and develop the necessary skills to perform the project design function to industry.

Design analysis of complex mechanical systems including advanced fluid power systems with closed-loop feedback control.

Mechanical reliability and maintainability principles applied to the safety and maintenance of advanced mechanical systems.

Application of computer-aided design, commercial computer packages and computer simulation of design characteristics of mechanical systems.

Consideration of project management systems including controlling and allocating sources of engineering projects, including cost evaluation.

Overview of design optimisation techniques and the project engineering function.

References
Design Standards for Mechanical Engineering Students. 44th edn, Sydney: Standards Association of Australia, 1985
Röhrer, P. Industrial Hydraulics. 2nd edn, Melbourne: Educa, 1986

ME482 Engineering Investigation
Two hours per week for one semester

A fourth-year subject in the degree course in mechanical engineering designed to familiarise students with the correct procedures to be followed when undertaking an engineering project or investigation.

The program covers a literature search, feasibility study and preliminary evaluation report indicating technical feasibility, costings and time restraints. Where appropriate the work should be continued under the fifth-year subject, engineering project.

ME501 Engineering Science 1
Four hours per week for one semester

A subject in the first of the degree course in mechanical engineering. Three 30-hour units are offered: advanced mathematics, energy systems and thermofluid mechanics. Students must take two of the three alternatives offered.

ME501A Advanced Mathematics
Two hours per week of integrated instruction and practice lectures, project and tutorial work.

A selection of topics will be made from the following list: advanced finite difference methods, classical optimisation, linear programming and numerical solution of systems of linear equations using Laplace equations; Fourier transforms; calculus of variations and Lagrangian dynamics; regression methods.

ME501B Energy Systems
Two hours per week for one semester, including lectures, laboratory work and tutorials.

This unit provides an overview of energy conversion processes along with work on established and developing thermal plant and equipment.

Available energy. Nuclear engineering. Solar radiation and applications. Topics selected from — direct energy conversion, advanced heat transfer, turbocharging IC engines and alternative automotive power units.

References
Watson, N. and Jähnert, M.S., Turbo-charging the IC Engine. London: Macmillan, 1982

ME501C Thermo/Fluid Mechanics
Two hours per week for one semester, including lectures, laboratory work and tutorials.

Three topics selected from — turbulence theory, flow of an ideal fluid, unsteady and compressible flow, flow Reynolds number flows, free surface flows.

References

ME502 Engineering Science 2
Four hours per week for one semester

A subject in the fifth year of the degree course in mechanical engineering. Three 30-hour units are offered: mechanics of materials, vibrations and acoustics, and instrumentation and systems controls. Students must take two of the three units offered.

ME502A Mechanics of Materials
Two hours per week for one semester

The subject deals with advanced strength of materials. Beams on elastic foundations; local bending in shell structures; deformation symmetry about an axis; thick walled cylinders; stresses due to interference fits, rotating discs of variable profile, thermal stresses in turbine discs. Finite element methods in stress analysis.

References

ME502B Vibrations and Acoustics
Two hours per week for one semester

The syllabus deals with advanced vibration analysis and acoustics. Vibrations: multi-degree of freedom systems, inertia, stiffness and damping; matrix representation; Modal analysis, parameter estimation; complex residues and poles, synthesis of the system transfer function H(s) and the frequency response function H(ejω) from experimental measurements. Interpretation of the modal analysis function components. Analysis of periodic and aperiodic signals, measurements signal processing and associated errors, transducer calibration techniques.
ME502C Instrumentation and System Control

Two hours per week for one semester

An advanced course in control applications to industrial systems and principles.

Control algorithms with application to industrial and process control systems, advanced control techniques or large-scale multivariable systems, distributed digital systems for instrumentation and control hardware and software and microprocessor-based controllers. Techniques to linearize nonlinear systems.

References

ME503 Engineering Technology

Six hours per week for one semester

A subject in the fifth year of the degree course in engineering technology. Three 45-hour units are offered: engineering design and numerical continuum mechanics. Students must take two of the three alternatives offered.

ME503A Ergonomics

Three hours per week for one semester including lectures, laboratory and tutorial work

The syllabus covers measurement techniques including physiological measures, scaling and data analysis, questionnaires and interviews; aspects of the socio-technical system: application of ergonomic principles to transport, building, computer systems, and control systems. Students are expected to undertake a study in depth and to present an oral report to the class.

References
Keats, J.A. An Introduction to Quantitative Psychology. Sydney: Wiley, 1977

ME503B Advanced Design

Three hours per week for one semester including lectures, seminars, project work and excursions.

The focus of the course will be on the wider issues affecting the design process in a modern competitive environment. Topics will be selected from strategic planning in design, innovation and creativity, research and development, reliability and maintainability, risk assessment in design, information systems, computer aided engineering, robotics, new materials, plant specification and tendering and emerging technologies.

References

ME503C Numerical Continuum Mechanics

Three hours per week for one semester including lectures, laboratory and tutorial work

This subject introduces students to the application of advanced numerical methods. Accuracy of the modeling technique, degree of difficulty, computing time and cost effectiveness are compared with experimental techniques and data for specific applications: heat transfer, vibration analysis of structures, stress analysis, and fluid mechanics.

References

ME504 Engineering Management

Four hours per week for one semester

A subject in the fifth year of the degree course in mechanical engineering. Three 30-hour units are offered: marketing, law and technical forecasting, decision analysis and financial management, and plant information systems. Students must take two of the three alternatives offered.

ME504A Marketing, Law and Technological Forecasting

Two hours per week for one semester including lectures and tutorial work.

The syllabus covers law and engineering organisations including regulatory and environmental laws, contract and patent laws, and professional and product liability, and marketing, the prediction of market trends, planning business actions, marketing policies and use of appropriate technologies.

References

ME504B Decision Analysis and Financial Management

Two hours per week for one semester including lectures and tutorial work.

The syllabus is designed to develop further modern concepts and techniques used in the management of engineering resources. Fundamentals of management, planning, systems, reports, Quantitative decision methods, system models and inclusion of more quantitative decision factors such as industrial relations.

References

ME504C Plant Information Systems

Two hours per week for one semester including lectures and tutorial work.

The syllabus is designed to develop expertise in modern methods of handling information to do with engineering plant and equipment. Acquisition, documentation, filing, processing, analysis, prediction and decision making. The subject is associated with the subject of information systems. Applications include procurement, operation, reliability, maintenance, updating and disposal of equipment and related personnel resource management.

References

References
Rao, S.S. Mechanical Vibrations. Reading: Addison-Wesley, 1986
ME582 Engineering Project

One hundred and sixty hours over nineteen weeks.

A student may select any degree in mechanical engineering which develops skills necessary to select, integrate, and apply appropriate knowledge, concepts and techniques to bring projects to successful conclusion.

The project may take various forms in which technology, research and development, design, experimental work and business acumen vary in their relative significance. Where possible the planning phase should be covered in the fourth-year subject, Engineering Investigation, with project execution in this project period. This will enable the work experience between fourth and fifth years to be used as a gestation period for the students, and enable equipment to be ordered or constructed.

ME621 Air-conditioning 1

Four hours per week for two semesters

Lecture/tutorial 100 hours
Laboratory and field work 20 hours
Assessment: Laboratory and assignments
Two x 2 hour tests

A subject in the graduate diploma in air-conditioning.


Humidifying by steam and water.


Human comfort requirements. Metabolic rate, latent and sensible heat rejection. Air movement, temperatures, moisture content and thermal radiation relationships for comfort.

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.


Domestic installations.


Boilers and heat generation: revise fundamentals, package boiler units, flue-gas analysis, regulations regarding boilers and atmospheric pollution.

References

American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAEHandbooks — Fundamentals, Systems, Applications and Equipment Volumes. Atlanta, GA, USA: Published by this Society.


ME622 Refrigeration

Three hours per week for two semesters

Lecture/tutorial: 80 hours
Laboratory: 10 hours
Assessment: Laboratory Assignments
2 x 2 hour tests

A subject in the graduate diploma course in air-conditioning.

The vapour compression cycle. P-h diagram.

Properties of and selection criteria for primary and secondary refrigerants.

The chlorine-ozone reaction.

Faculty of Engineering

ME621 Air-conditioning 1

ME622 Refrigeration

Positive displacement compressors. Descriptive treatment of construction of rotary vane, screw and reciprocating compressors. Classification according to duty.

Reciprocating compressor clearance and actual volumetric efficiency. Volumetric and isentropic efficiencies of all types. Effect of internal leakage on discharge temperature and efficiency.

Lubrication. Viscosity. Oil trapping and return methods.


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, changing, pump-down and defrosting.


References

American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAEHandbooks — Fundamentals, Systems, Applications and Equipment Volumes. Atlanta, GA, USA: Published by this Society.

Dossat, R.J. Principles of Refrigeration. 2nd edn, Canada: Wiley, 1961

International Institute of Refrigeration. Thermodynamic and Physical Properties R12, also for R22. Paris: Published by this Institution, 1981


Australian Institute of Refrigeration, Air Conditioning and Heating (Journal)

ME641 Ergonomics

Three hours per week for one semester

A subject in the graduate diploma in risk management.

Assessment by assignment

A subject in the graduate diploma in risk management.

References


ME652 Occurrence Analysis
A subject in the graduate diploma course in risk management.
Scientific methodology.
Principles of phenomenology; application to unexpected/unwanted occurrences.
Models of occurrences; development and use of models, energy damage and time models, use with cases appropriate to each stream.
Application to occurrence recording, investigation and information systems.

References

ME660 Risk Management
Forty-five hours over two semesters
A subject in the graduate diploma in risk management.

Assessment by examination.

Insurance:
Brief history and concepts of insurance.
Principles of insurance: contents, claims estimates, premium determination.
Types of premiums (fixed, burning cost) re-insurance: the role of brokers.
Liability insurance (product, public, employee and employee), contract types and administration.
Professional indemnity: contract types and administration.
Breakdown insurance: contract types and administration.
Catastrophic loss insurance: contract types and administration.

Risk Management:
Concepts and definitions; definition of risk management, organisational and risk management objectives.
Risk management models (overview) and definition of terms:
the process model, assets, vulnerabilities, exposure and threats model, functions and activities models.
Risk control: principles and practices (loss retention, reduction and transfer, including pre and post-loss).
Risk control decision-making; principles and practices.
Systematic risk control and risk management systems, organisational and national structure for risk management, crises management, assessment of organisation effectiveness ("MORT").
Risk management practices and case studies.

References

ME661 Risk Engineering 1
Two hours per week for one semester
A subject in the graduate diploma course in risk management.
Definitions of and distinction between risk and reliability engineering.

Morphological analysis principles and application to risk and reliability systems: synthesis and analysis techniques (event, fault tree, failure mode and effect).
Application of reliability mathematics to the assignment of probabilities of success. Emphasis on qualitative and logical approach.
Sources of failure, probability and reliability data. Review of Software applications packages.

References

ME664 Risk Engineering 2
Three hours per week for one semester including lectures, tutorials and workshops
A subject in the graduate diploma in risk management.

Risk Control Models
Time sequence ‘model’, particularly for fire.
Occupational Health and Safety; overview of principles of risk assessment and control — a model.
Application of occurrence phenomenology.

Risk Control Strategies
Highly Protected Risk (HPR) concepts, development, criteria and impact.
Pre-event control and design:
— prevention — control of ignition sources, damaging energy sources;
— design for control (particularly for fire);
— automatic detection and suppression systems: uses and applications;
— design for control by limiting loss potentials — basic design for minimisation of loss potential, fire walls, space separation, bundling, etc.
Planning for emergencies, private and public fire brigades.

References

ME675 Maintenance Management 1
Two hours per week for one semester
A subject in the graduate diploma course in risk management and maintenance engineering.

Maintenance function: relationship of maintenance within and to the organisation.

Terotechnology: life cycling costing, selection of plant, plant system design and effectiveness.

RAM engineering, reliability, fundamentals, analysis, prediction and verification of reliability, maintainability fundamentals and concepts, applications of RAM engineering.

References

ME676 Property and Production Risk Management
Two hours per week for one semester
A subject in the graduate diploma in risk management.

Risk and Maintenance Financing:
Brief history e.g., Lloyds, Factory Mutual, Australian experience.
Levels of cover, deductibles, reinsurance, self insurance, limits of cover, perils, business interruption, construction exclusions.
Role of parties, insured, agent or broker, insurer and reinsurer; government.

Risk and Maintenance Financing:
Financing Models.

Relationship between risk and maintenance.
Terotechnology; life cycle costing including the cost of risk.

References

Forsee
ME678 Health and Safety Management

Two hours per week for one semester

A subject in the graduate diploma course in risk management.

Occupational Health and Safety

Historical precepts in injury control: pre 20th Century, the industrial revolution, the factory inspectors, Heinrich, Haddon, Wigglesworth.

Objectives and strategies: implementation of risk management systems. Identification and quantification of risk. Evaluation criteria and methods (standards and regulations, technical specialists' role, committees and unions), implementation of control measures and control measure hierarchy. Rehabilitation and Claims Management.


Organisational design for effective implementation and maintenance of a program: role, responsibilities, reporting programs, program audit. Sources of information: risk and control information. Public and Product Health and Safety

Risk assessment for public and product risk: methods, criteria and program elements, incident reporting, design and disposal screening. Public health and safety program design and management.

Product guarantees, warranties and usage information, recall procedures, incident reporting system.

References


ME721 Air-conditioning 2

Four hours per week for one semester

Lecture/tutorial: 40 hours

Laboratory and field work: 30 hours

Assessment by assignment

A subject in the graduate diploma course in air-conditioning.

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.

Fans and pumps: types, characteristics, construction, system matching, energy consumption, part-load fan operation.

Noise and vibration: background theory, NR curves, noise and vibration of fans, effect of duct and pipe velocities, sound attenuators in line, unlined ductwork, sound mitters, 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 layout, 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, ducts and air contaminants.

References


ME722 Refrigeration 2

Three hours per week for one semester

Lecture/tutorial: 30 hours

Laboratory work: 15 hours

Assessment: Assignments and Laboratory On one 2 hour test

A subject in the graduate diploma course in air-conditioning.

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. Condensation 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.


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


ME729 Fluid Mechanics

Three hours per week for one semester, including lectures and laboratory/tutorial work

A subject in the graduate diploma courses in biochemical engineering and chemical engineering.

This subject provides a study of fluid mechanics appropriate to chemical engineering.

Review of fluid properties: fluid statics and dynamics; measuring devices; boundary layer concepts; flow and pressure drop in pipes. Valve characteristics, piping systems; characteristics of pumps and fans. Effect of blade orientation, cavitation, negative suction, positive displacement machines; methods of control.

References


ME731 Instrumentation and System Control
Three hours per week for one semester
Lecture/tutorial: 35 hours
Laboratory work: 10 hours
Assessment: Assignments and Laboratory
One x 2 hour test
A subject in the graduate diploma course in air-conditioning.
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 container types and a practical understanding of system control.
DCC, 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

ME742 Health and Hygiene
Four hours per week for one semester
A subject in the graduate diploma course in risk management.
Toxicology: routes of entry, dose-response relationships. Threshold limit values and other measures applied to chemicals, noise and vibration and radiation.
Particular chemical hazards and their effects: solvents, dusts, welding fumes, heavy metals, sensitisation, cancer, respiratory and other system effects. Medical monitoring programs: principles and practices.
Respiratory protection (dusts, mists and vapours): types of equipment, effectiveness in use, program requirements for successful implementation.
Ventilation system design practices (extraction and dilution).
Noise and vibration: effects on human beings, damage risk criteria, practical control measures. Hearing protection devices: types, effectiveness, selection, program requirements for successful implementation.
Thermal condition: Thermoregulatory mechanisms, effects of high and low temperatures, measurement of thermal condition (WBGT, ET, HSII), risk zones and criteria, policies and standards, control of thermal condition.
Radiation (ionising and non-ionising): uses and applications of damage-risk criteria, control methods.
Biological hazards: legionnaire’s disease, zoonoses, AIDS, bacterial infections — principles and controls.
Stress (physical, psychological and social stressors and stress effects): principles of the stress reaction, identification of stress effects, control strategies.

References

ME743 Health and Safety Practices and Technology
One hour per week for one semester
A subject in the graduate diploma course in risk management.
Technology and practices in the safe operation and/or use of: machinery and tools (e.g. power presses, woodworking, metalworking, construction) grinding wheels compressed fluids vehicles (fork lift trucks, mobile equipment, trucks) cranes, dings, hoists stairs, steps, ladders, platforms

Personal protective equipment: selection, implementation and use (eye, face, head, hand, foot).
Emergency equipment and procedures: breathing apparatus use, gas and smoke detection equipment, procedure design and maintenance.
Particular industry practices (to suit needs of students).

References
Australian standards and codes of practice.

Papers from the literature.

ME762 Risk Engineering 3
Four hours per week for one semester including lectures, tutorials and workshops.
A subject in the graduate diploma course in risk management.
Risk assessment methods. Risk assessment methods — risk use and tree analysis.
Fault tree analysis. Threat and Vulnerability Assessments.
Hazop and Hazan: Flow charting and critically analysis.
Use of historical databases. Use of insurance criteria.

References
Browning, R.L. The Loss Rate Concept in Safety Engineering. New York: Marcel Dekker, 1980
Kletz, T.A. Myths of the Chemical Industry or 44 Things a Chemical Engineer Ought to Know. Rugby: Institute of Chemical Engineers, 1984
Kletz, T.A. Cheaper Safer Plants or Wealth through Safety at Work — Notes on Inherently Safer and Simpler Plants. Rugby: Institute of Chemical Engineers, 1985

ME764 Risk Control Practices and Technology
Four hours per week for one semester including lectures and laboratory work.
A subject in the graduate diploma course in risk management.
Particular skills, hardware and codes with applications to specific hazards.
Fire: flame-detection, heat detection, smoke detection. Extinguishing systems; water, CO2, dry chemical, foam and Halon.
Australia and US standards.
Water sprinklers and hydrants, pumps and tanks, Australian and US standards.
Explosion: detection and suppression for dusts, boilers and pressure vessels, gas trains.
Flammable substances: handling and storage.
Other perils.

References
Factory Mutual System. Various data sheets.

ME765 Risk Engineering (H&S)
Three hours per week for one semester.
Assessment by assignment
A subject in the graduate diploma course in risk management.
Engineering risk control for external and internal energy sources.
Application of event analysis techniques to typical machines or processes. Principles and practices of prioritisation and work scheduling for risk control tasks. Machinery safeguarding design.
Isolation procedures and work permit systems. Work procedure design: principles, legal criteria, reliability of behavioural control measures.
Electrical safety. Fire explosion principles and practices. Information sources.
ME774 Maintenance Practices and Technology

Four hours per week for one semester

A subject in the graduate diploma course in risk management.

Diagnostic and analytical methods with applications to plant and equipment for condition and performance monitoring, vibration, and noise. Measurement methods, analysis methods, oil analysis methods, interpretation of atomic absorption spectrographic methods, development of inspection and trend analysis techniques.

References
Nomenclature for Hazard and Risk Assessment in the Process Industries Rugby 1 Chem E, 1984

ME776 Maintenance Engineering Science

Three hours per week for one semester

Assessment by assignment

A subject in the graduate diploma courses in risk management and maintenance engineering.


References

ME777 Maintenance Management 2

Four hours per week for one semester

Assessment by assignment

A subject in the graduate diploma courses in risk management and maintenance engineering.


References

ME780 Major Project

Fifty-four hours over two semesters

Assessment by project, report and seminar.

A subject in the graduate diploma course in risk management.

Use of library, definition of computer search keyboards, sources of data (databases). Research and project methods and discipline. Execution of a project aimed at developing skills necessary to select, integrate, and apply appropriate knowledge, concepts and techniques to achieve a practical result. Where possible the project shall be based on the student's employment experience and shall address a real problem in industry.

ME781 Project and Energy Management

Four hours per week for one semester

Lecture: 20 hours
Project: 40 hours
Assessment: By staff consultation and comprehensive written report

A subject in the graduate diploma course in air-conditioning.

Project management: Contract law, scheduling, costing, optimisation, maintenance program development.

Energy management: Including energy source selection, energy management, life cycle costing, system optimisation, basics of contracting and project management, and current state of the art applications where applicable.

Field project: The project should be of a practical nature linking the course elements of air-conditioning, refrigeration and system control and involve the application of project and energy management techniques. Where practicable the project should be undertaken by groups and group size should not exceed 4.

References

ME785 Technology and Innovation

Three hours per week for one semester

A subject in the graduate diploma course in entrepreneurial studies.

A study of the elements of technological development of an invention to a commercial product, covering the following stages: information sources; evaluation of a potential innovation, including need, market, financial feasibility and social implications; research methodology; product design and development.

References

ME903 Advanced Control Systems and Devices

Two hours per week for two semesters

Assessment by assignments and examination

A subject in the master of engineering CIM course.


Textbooks
MP106 Engineering, Drawing and Graphics

Three hours per week for two semesters
Assessment by assignments and examination

A first-year subject in all engineering degree courses.

Basic studies cover the fundamental principles of engineering drawing — standards, conventions, practices and procedures, applicable to the general field of engineering. Studies and exercises cover principles, use of correct lines, orthographic projection, assembly and detail drawings, materials lists, sectioning, use of scales, dimensioning and specification.

Graphic solution of engineering problems, load and stress diagrams. Developments and intersections, curves and surfaces in 3D.

Computer aided draughting:
Studies extend to cover drawings and standards used in Mechanical, Civil, Electrical, and Manufacturing Engineering. Assembly and detail drawings incorporating these features.

Textbook
Australian Engineering Handbook. Australia: The Institution of Engineers.

References
Relevant Australian Standards

MP183 Materials and Processes

Four hours per week for one semester
Assessment by laboratory, assignments and examination

A first-year subject in all engineering degree courses.

Solid state: effects of bonding and atomic structure on mechanical properties of solid materials.
Deformation and forming: elastic, plastic and viscoelastic, relationship of manufacturing process to properties of final product.
Fracture ductile, brittle, creep, fatigue and stress corrosion.
Equilibrium: solidification and structure, equilibrium diagrams, corrosion.
Mechanical testing: commonly used testing methods.
Case studies: several case studies will be considered involving manufacturing processes, quality and reliability, measurement and instrumentation, value engineering.

Textbook

References

MP186 Building Materials

Three hours per week for one semester
Assessment by assignments and examinations

A first-year subject in the diploma course in building surveying, intended to give students an understanding of the behaviour of building materials so that they can determine whether traditional materials are being used correctly and appraise new materials.

Phases, solid solutions, metal crystal structures, polymer structures, silicate structures.
Equilibrium: phase relationships and equilibrium diagrams.
Mechanical properties: deformation and fracture, non-destructive testing.
For references and textbook see MP183.

MP201 Manufacturing Practice

Four hours per week for one semester
Assessment by laboratory, practical work and assignments

There is no formal syllabus for the subject. However, the students will be provided with work sheets on each practical session which detail the work to be done in that session.

An example of a practical session may be as follows (detailed work sheets would exist for each):
Produce a tapered plug gauge by turning followed by, grinding. Measure that plug gauge in the metrology lab for maximum and minimum diameter and taper.
Several such projects will be given to each student. Reports will be submitted every week for marking.

Textbooks
Nil

References
Nil

MP203 Industrial Processes

Two hours per week in semester 1
Four hours per week in semester 2

A second-year subject in the degree course in manufacturing engineering.

Brief history of the development of the chemical industry.
The operation of major chemical and mineral processing industries such as:
— inorganic — cement, fertilisers, chlorine and caustic, metals such as aluminium, uranium etc;
— organic — petroleum refining and refining, including the processes of distillation, cracking and reforming etc, petrochemicals;
— natural sources — soap, fermentation processes for the manufacture of raw chemicals, antibiotics, antibiotics etc., food processing industries;
— energy resources — coal, oil, uranium, biomass, etc;
— aspects of the chemistry of aliphatic and aromatic compounds, including naming conventions, substitution, polymerisation, etc.

Textbook
As specified by the lecturer.

MP221 Manufacturing Technology (P)

Three hours per week in semester 1 and two hours per week in semester 2
Assessment by laboratory work, tests and assignments

A second-year subject in the degree course in manufacturing engineering.

Machining processes: traditional chip removal processes; types, theory of metal cutting, tool materials and geometry, cutting parameters, tool life, cutting fluids. Non-traditional machining processes: USM, EDM, LEM, etc.

- Metallurgy: casting, production of plastic components by power production, casting, component design, casting metals: solidification, injection moulding, and other processes.


Towards accuracy, uncertainty in measurement.

Textbooks
MP223 Introduction to Chemical Engineering

Three hours per week in semester 1

A second-year subject in the degree course in manufacturing engineering. Introduction to chemical engineering: history and development of the chemical process industries; origins, flowsheets and process descriptions of chemical processes exemplifying the inorganic, organic, and biological operations. The role of the chemical engineer and a general outline of the broad areas of study of chemical engineering. Thermodynamics and physical chemistry: First law of thermodynamics, Ideal gas law, Equations of state, compressibility, fugacity, enthalpy and entropy. Second law of thermodynamics, Refractivity and other properties, expansion and compression processes. Physical equilibrium, Bubble and dew points, phase diagrams, activity coefficients, Gibbs-Duhem equation, Krafft point, reaction equilibria, heats of reaction and mixing, Concentration, temperature, and pressure dependence of rate of reaction, batch, plug flow and backmix reactors; absorption and catalysis, Electrocrtchemistry.

Textbook

MP232 Industrial Engineering

Three hours per week for one semester

A second-year subject in the degree course in manufacturing engineering. History, theory and practiced methods study and work measurement principles, definitions, symbols and terminology, Methods improvement techniques, time study, work place layout and productivity measurement and improvement. Standard performance: financial incentives based on work measurement, human factors in work study, Materials handling and shop layout.

Textbook

MP241 Design for Manufacture (P)

Three hours per week for semester 1 and two hours per week for semester 2.


Textbook

References
A list of references is supplied by the department.

MP233 Chemical Engineering Design 1

Three hours per week in semester 1

Two hours per week in semester 2

Assessment by examination

A second-year subject in the degree course in manufacturing engineering. Chemical engineering computations: exercises in the application to a variety of chemical engineering situations of dimensional analysis, treatment of experimental data, nomographs and graphical techniques. Basic design techniques: mass and energy balance calculations, flowsheets, stoichiometric calculations involving bypass, recycle and purge; combustion and heat engine calculations.

Textbook

MP254 CAD/CAM

Two hours per week for one semester


MP281 Engineering Materials

Three hours per week for two semester

Assessment by assignments and examination

A second-year subject in the degree course in manufacturing engineering. An extension of the work done in first year materials to consider the science and technology of some materials as a basis for work in manufacturing technology and design for manufacture. Structure, treatment and properties of: metals, ferrous and non-ferrous; polymers, thermoplastic, thermostetting, elastomeric, ceramics — crystalline and non-crystalline; composite systems. Welding and joining systems. Tribology.

Textbook

References


MP282 Engineering Materials

Two hours per week for one semester

Assessment by assignments and examination


Textbook
Van Vlack, L.H. Materials for Engineering. Reading: Addison-Wesley, 1982

References


MP284 Engineering Materials

Three hours per week for one semester
A second-year subject in the degree course in mechanical engineering.
Extends the work covered in first year materials to the characteristics of materials of particular importance in mechanical engineering.

Textbook

References
Van Vlack, L.H. Materials of Engineering Reading: Addison-Wesley, 1982

MP285 Materials and Environment

Three hours per week for one semester
A second-year subject in the degree course in electrical and electronic engineering.

Textbook

References
Van Vlack, L.H. Materials of Engineering Reading: Addison-Wesley, 1982

MP286 Building Materials 2

Four hours per week for one semester
A second-year subject in the diploma course in building surveying 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/afasteners, comparative costs of various joining methods. For textbooks and references see MP183

MP301 Instrumentation and Control

Two hours per week for one semester
A third year subject in the degree course in manufacturing engineering. Measurement and control variables encountered in manufacturing processes: acceleration, distance, flowrate force, physical properties, pressure, temperature, velocity, vibrations, etc.

Textbooks

MP341 Manufacturing Technology (P)

Five hours per week for one semester


Numerical Control — Automation control and performance, introduction to N.C. machines, and systems. Design considerations in N.C. programming methods, APT CAD/CAM, DNC.

Textbooks

MP343 Stagewise Processes

Five hours per week for one semester
A third year subject in the degree course in manufacturing engineering. Design of mass transfer equipment. Selection of required number of stages: the concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, and other mass transfer operations. Graphical and computer-based design techniques employing this concept. McCabe-Thiele, Sorel and Ponchon Savart methods, batch and continuous operations. Performance characteristics: behaviour of plate and packed columns, characteristics of packing, bubble caps, weirs and downcomers, flooding, hold-up and pressure drop, selection of optimum column diameter. Chemical manufacturing techniques: applications of mass transfer operations. Enhancement of absorption, liquid extraction and leaching, in chemical manufacturing, descriptions of the equipment in which these operations are carried out.

Textbooks

MP314 Manufacturing Technology

Three hours per week for one semester
Including lectures, laboratory and tutorials
A third year subject in the degree course in mechanical engineering which familiarises the student with manufacturing methods and techniques.
Fundamental and working standards for metrology, principles of measurement and gauging, instruments, applications to mechanical components. Quality control and assurance in manufacturing, sampling. Modern production methods and machine tools, material removal processes, chip formation, friction, wear, lubricants and coolants, tool life.
MP321 Engineering Administration

Four hours per week for one semester
Assessment by class assignments and tests

A third-year subject in the degree course in manufacturing engineering. Historical background to industrial management is followed by a brief treatment of the classical management theory. Organisation of enterprises is related to the factors affecting its operation. Financial aspects are introduced — funding, costing, etc. State and federal legislation affecting industry — arbitration, compensation, labour and industry, etc. Basic psychology is supplemented with the fundamentals of personnel management — leadership, supervision, recruitment.

Textbook

References

MP351 Design for Manufacture (P)

Four hours per week for one semester
Assessment by assignments, projects and tests


Kinematics of non-uniform motion: cams, linkages, transfer and feeding. Advanced machine elements design, elements subject to complex stresses, effects of design for fatigue strength. Tooling design for metalworking: economy and quality relationship, eg fixture design, cutting tools, tool design for sheet metal work.

Textbook

References
As for MP321 plus
selected Australian and British Standards

MP353 Design for Manufacture (C)

Four hours per week for one semester
Assessment by examination


Textbooks

MP381 Systems Engineering

Two hours per week for one semester
Assessment by tests, assignments and laboratory work


Textbooks

MP384 Engineering Materials

Three hours per week for one semester
Assessment by assignments and examination


References
Van Vlack, L.H. Materials for Engineering. Reading: Addison-Wesley, 1982

MP461 Manufacturing Technology (P)

Five hours per week for one semester
Assessment by laboratory work, assignments and tests


Textbook
As for MP341 plus
Rowe, G.W. Elements of Metal Working Theory. Arnold
MP463 Heat Transfer

Heat Transfer Equipment — description and selection of shell and tube exchangers and alternative geometries such as corrugated plate and close-tube arrangements; extended surfaces. Boilers, condensers, tube stills, furnace, etc., with examples of their application in the chemical industry.

Review of Previous Work in Heat Transfer — the relevant parts of the syllabus of Thermodynamics and Heat Transfer (1st year) will be reviewed, namely conduction heat transfer, conductivity, Newton's Law of cooling, overall coefficients.

Mechanisms of Heat Transfer — prediction of coefficients of heat transfer by the mechanisms of natural and forced convection, film and dropwise condensation, nucleate and film boiling. Radiation heat transfer including Stefan, Planck equations, black body concept, emissivity and absorptivity; radiation functions, shape factors, Beer's Law.

Design Techniques — LMTD: FT and E-NTU methods to determine temperature driving forces. Thermal rating of shell and tube exchangers — selection of optimum tubeshell arrangements, baffle cut and spacing; prediction of coefficients, temperature driving force, and pressure drop.

Textbooks


MP414 Manufacturing Technology

Two hours per week for one semester Assessed by tests and assignments

An elective subject in the fourth year of the degree course in mechanical engineering.

An introduction to CAD, CAM i.e. numerical control, CNC, DNC, DDIIC use of CADAM and CATIA, complex surfaces, Wire frame, solid and geometric modelling, Robot and NC simulation.

Flexible manufacturing systems; integration of manufacturing technology and systems management. Robots, guided vehicles, quality, CIM.

MP421 Industrial Management

Three hours per week for one semester Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Accounting

Introductions to accounting, original transactions, balance day adjustments, profit determination.


Psychology

The personal management function, problems and practices; personality studies — conditioning (classical and operant), assertiveness training and self-esteem, values, defence mechanisms. Sexuality and sexism; the use of conceptual models, listening, relaxation. Change and conflict — their constructive uses.

Managerial economics

Supply and demand, elasticity, pure competition, monopoly and oligopoly; microeconomics of cost, profit, marginal concepts; profit maximisation, pricing, cost of capital; macroeconomic fundamentals; banking system and credit; government controls; inflation; national accounts; GDP, international competition; application of DCF to leasing.

References

Lodewijckx, H. Cost Accounting, 2nd edn, Boston: Kent, 1986

MP422 Engineering Administration

Two hours per week for one semester Assessment by test and assignments

A fourth-year subject in the degree course in electrical and electronic engineering.

Development of modern management theory and its application to the organisation of enterprises, their needs and structures. Understanding human behaviour and the fundamentals of leadership and supervision.

Textbook


References


MP431 Industrial Engineering

Three hours per week for one semester Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Plant layout design: systematic layout planning; material handling; methods, tools; line balancing; project management structure; CPM/PERT, management, formulation by linear programming; queuing theory applied in design of manufacturing systems; site visits, computers and packages used for topics, computer-aided layout design. Mathematical models useful in design and operation: transportation, assignment, travelling salesman problems.

References

Muller, R. Systematic Layout Planning, 2nd edn, Boston: Cahners, 1973

MP441 Manufacturing Systems

Two hours per week for one semester Assessment by test and assignments

A fourth-year subject in the degree course in manufacturing engineering.

Introduction to modern manufacturing systems and techniques: forecasting; operations planning; inventory and planning control; operations scheduling; dispatching and progress control. Simulation and modelling techniques for testing production management policy decisions; computer simulation languages — concepts and techniques; systems dynamics applied to industrial problems.

References

Monden, Y. Applying Just In Time. Norcross: IIE, 1988
Faculty of Engineering

MP451 Design for Manufacture (P)
Four hours per week for one semester
Assessment by examinations, assignments and projects
A fourth-year subject in the degree course in manufacturing engineering.
Tooling design for metalworking: economic 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
As for MP441 and MP261 plus
Selected Australian and British Standards

MP453 Design for Manufacture (C)
Four hours per week for one semester
Assessment by examination and laboratory assignments
A fourth-year subject in the degree course in manufacturing engineering.
Chemical manufacturing techniques: basic fluid particle systems, hydraulic classification, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.
Powder technology: handling and transport of powders, powder mixing, crushing, grinding and screening.
Non-Newtonian fluid dynamics: Newtonian and non-Newtonian fluid dynamics with examples drawn from plastics processing industry.

Textbook

MP471 Numerical Engineering
Three hours per week for one semester
Assessment by examination and assignments
Linear and cubic Hermite basis functions, applications including beam problems.
Method of weighted residuals for partial differential equations, finite element computer applications for Laplace and Poisson problems.
Rod elements, beam elements, plate and shell theory, theories and analysis in structural stability. Application of finite elements to manufacturing engineering employing a PC based package — STRAND 5.
Examples of solutions to beam problems. Comparison of results with elasticity solutions.

References
Burnett, D. Finite Element Analysis. Reading: Addison Wesley, 1987

MP484 Engineering Materials
Two hours per week for one semester
Assessment by tests and assignments
An elective subject in the fourth year of the degree course in mechanical engineering.
Welding and joining of ferrous and non-ferrous materials, treatment of structures of welds, welding processes, weld costing, nondestructive testing, fracture mechanics, Beer’s Law.

MP496 Computer Applications
Two hours per week for one semester
Assessment by project
A fourth-year subject in the degree course in manufacturing engineering.
Students will work in groups on selected problems, supported by computer packages such as the following:
Chemical Engineering
Chemshare
AspenPlus
Flowtran
Hisim
Production Engineering
SIMAN
MAX
Supersp/Pat12/PCANSYS
Simfactory
Die design (in house)

Textbooks
Will be advised by the lecturer at the beginning of the course
References
Will be advised by the lecturer at the beginning of the course.

MP502 Manufacturing Project
One hundred and ninety hours over nineteen weeks
Assessment by thesis
A fifth-year subject in the degree course in manufacturing engineering.
This subject is the major individual research project in the course. At the end of the fourth-year academic period, each student is given, or allowed to select, a research project related to manufacturing engineering.
The student is 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 gives short oral presentation of the aims, objectives and experimental method to be followed.

MP511 Manufacturing Technology (P)
Five hours per week for one semester
Assessment by laboratory, assignments and tests
A fifth-year subject in the degree course in manufacturing engineering.
Automation and automated assembly: CAM, CAD, manufacturing systems. NC robots, feeding orientation and placement.
Hot/warm working: comparison of techniques of polymer processing, e.g., extrusion, injection moulding, thermoforming and blow moulding for the production of particular components. Selection and costing with the optimisation of the use of the materials. Comparison of thermoset versus thermoplastic materials using elastomers and examples.

Textbooks
As for MP461
Design of machinery for production
Computer aided design
Introduction and the use of the latest software related to tooling design, production sequences, and production equipment design. Packages for the design and analysis of machine elements.
Industrial robots design
Value analysis
Project in industry
Approximately 50 hours of effective work. Topics connected with design for manufacture — improvement of production equipment and production techniques in local industrial firms.

References
Blake, P (ed) Advanced Manufacturing Technology Amsterdam: North Holland, 1992
Faculty of Engineering

MP614 Systems Engineering
Two hours per week for one semester
Assessment by assignments, tests and laboratory work
A subject in the graduate diploma course in manufacturing technology. Laplace transform techniques, block diagrams, transfer functions, system stability and performance criteria. Analysis of linear system by Root Locus and frequency Response techniques. Computer methods including finite difference methods to predict system performance. Application to engineering problems. This subject contains a substantial self study section or project.

Textbook

MP615 Instrumentation and Control
Two hours per week for one semester
Assessment by assignments, tests and laboratory work
A subject in the graduate diploma course in manufacturing technology. Measurement and control of variables encountered in manufacturing processes: acceleration, distance, force, physical properties, pressures, temperature, velocity, vibrations, etc.
This subject contains a substantial self study section or project.

Textbook

MP616 Numerical Engineering Project
Two hours per week for one semester
Assessment by reports
A subject in the graduate diploma course in CAD/CAM. Individual or group projects involving coordinate measuring machines and CAD/CAM.

MP617 Robotics
Two hours per week for one semester
Assessment by assignments and tests
A subject in the graduate diploma course in CAD/CAM. Robot geometry and kinematics, kinematic equations. Motion trajectories, joint motion, control techniques, microprocessors and interfacing to computers. Programming robots, sensing devices.

MP618 Production Technology 1
Five hours per week for one semester
Assessment by assignments, tests and laboratory work
A subject in the graduate diploma course in manufacturing technology. Polymer Rheology — Mathematical description of non-Newtonian fluids: flow of non-Newtonian fluids in a pipe. Temperature dependence of viscosity as described by the Arhenius equation. Introduction to viscoelastic solids in constant and cyclic loading. Compounding—thermodynamic theory of miscibility. Statistical theory of mixing and application to current mixing machinery and systems. Extrusion and Extruders single screw, multiple screw, mathematical analysis of melt fracture and die swell. Discussion of thermforming and moulding systems. This subject contains a substantial self study section or project.

Textbooks
As for MP341.

MP619 Production Technology 2
Five hours per week for one semester
Assessment by assignments, tests and laboratory work
A subject in the graduate diploma course in manufacturing technology. Mathematical analysis of forming: equilibrium analysis of common working processes, e.g. wire drawing, strip drawing, extrusion, tube drawing, forging and rolling. Redundant work, friction and lubrication. Nomograms for solution of forming problems. Deformation mechanics: slip line field applied to cutting and forming problems, metal flow.

Polymeric Materials — Blow Moulding — Parison Production including Parison Programming. Closing, blowing and ejection. Cooling systems including economic analysis of specially cooled cooling. Stretch Blowing Moulding — effects on the material and products and production economics in particular. Injection Moulding. Introduction to mouldflow indicating how it can be used in the design of moulds. Calculation of shrinkage during moulding to allow for the design of moulds. Production of fibre composites based on current fibreglass systems. Application of solid mechanics in fibre reinforcement to allow for fibre misalignment during moulding.


This subject contains a substantial self study section or project.

Textbooks
As for MP611.

MP621 Computer Aided Design 1
Two hours per week for fifteen weeks, semester 1
Lectures, tutorials and project
Assessment: Assignments and project, written test
A subject in the graduate diploma course in CAD/CAM. CAD and its relationship in a totally integrated manufacturing process. Generation of geometric data bases. Development of CAD systems — wireframe sculptured surfaces, polygonal schemes, solid modelling, (constructive solid geometry). 2D, 2.5D, 3D modelling. Integrating CAD into the CAD/CAM process. Designing a simple 2D CAD system using fundamental programming skills. Development and capabilities of 2D and 3D CAD/CAM packages. Configuration of the IBM mainframe CAD system. "Hands on" CAD/CAM system, with attention to file maintenance, function keybord, image manipulation (zoom, translate, pan, etc.) screens and windows. 2D and 3D drafting and plotting.

References
Foley, J.D. and Van Dam, A. Fundamentals of Interactive Computer Graphics. Reading: Addison-Wesley, 1982

MP622 Computer Aided Design II
Three hours per week for fifteen weeks, semester 2
Prerequisite: MP621 Computer Aided Design I
Lectures, tutorials and project
Assessment: Assignments and project, written test

References
Foley, J.D. and Van Dam, A. Fundamentals of Interactive Computer Graphics. Reading: Addison-Wesley, 1982
MP623 Computer Aided Design III

Two hours per week for fifteen weeks, semester 1
Lectures, tutorials and case studies
Assessment: Assignment and project, written test

A subject in the graduate diploma course in CAD/CAM.

Reference

MP624 Manufacturing Automation 1

Three hours per week for one semester
Lectures, tutorials and laboratory work
Assessment: Assignments, laboratory reports and examination

A subject in the graduate diploma course in CAD/CAM.
Conventional Automation
Pneumatic systems and circuits, Electrical, Electronic, Hydraulic, Mechanical and Hybrid systems, PLCs and their applications.
Automated Machining Systems
Flow line systems, Automatics and Semi Automatics, Copy and turret machines.
Introduction to Numerical Control (N.C.)
History, development and concepts of NC, CNC, DNC, DDNC, Configuration of, and programming methods for NC machines and equipment. Classification of NC machines (2D to Multiaxis), Open, Closed loop and adaptive control. Elements of machines and system hardware. Control system features. Overview of general economic considerations involved in NC.
Programming NC machines
Tape Codes: I.S.O. and E.I.A., part programming languages and procedures.

Textbook

MP625 Manufacturing Automation II

Three hours per week for one semester
Lectures, tutorial and laboratory work
Assessment: Assignments, reports (Lab) and examination

A subject in the graduate diploma course in CAD/CAM.
Justification and Economics of NC
Factors to be considered in NC — tangible and intangible benefits, economic comparison with other machining methods. Economics of placing work on existing NC machines. Economic analysis of complete systems and batch size. Break even studies.
Flowlines and Flowline balancing
Terminology, analysis of flowlines, discussion of computer simulation, Flowline balancing.
Systems Integration
Elements of a Computer Integrated system: Robots, NC, CAD, co-ordinate measuring machines, guided vehicles. FMS, CIM.
Machineability Data
Data sources, consideration of tool materials, tool angles, machining methods, cutting fluids and optimisation of cutting conditions.
Expert and knowledge based systems
Discussion of relevance of and characteristics of knowledge based or expert systems for CAM.
Laboratory
Practical work relating to programming and using: CNC machining centre, CNC lathes, robots and co-ordinate measuring machines.

Textbook

MP631 Management of CAD/CAM Technology

Two hours per week for one semester
Lectures, tutorials, case studies, role plays, problem solving exercises, seminars, visiting speakers
Assessment: Assignment and project, written test

A subject in the graduate diploma course in CAD/CAM.

- The impact of new technology on the enterprise: the opportunities, threats, change and challenges to the enterprise and the nation.
- CAD/CAM project planning, cost and feasibility studies, project management. The CAD/CAM vendors and their products, who to contact, dealing with technical, evaluating alternatives, contracts, main tenders and agreement, installation and commissioning.
- Impact of CAD/CAM on the organisations and the organisation structure, the impact on traditional job roles, implications for work organisation and job design, involving and motivating people.

Industry relations
Implications of CAD/CAM, union attitudes, implications of CAD/CAM for awards and agreements.
Ergonomics and occupational health and safety issues relating to CAD/CAM.

Training for CAD/CAM: selection of personnel to be trained, approaches to CAD/CAM training, dealing with personnel who cannot cope, individual learning styles. Training facilities, TAFE and CAE courses, commercial training services. Typical training problems.
Government initiatives relating to CAD/CAM: research grants, tax benefits, roles of state and federal government agencies and departments, industry projects (e.g. heavy engineering project).
Support organisations: consulting services; CIM Centre, VIC CAD/CAM Network, AMTEC etc., assistance from professional bodies (IPProA, ACADS, SME, IE Aust etc.), interest and user groups.

Interface with other subjects of the course is motivated.

References

In addition to the above references, the student will be referred to relevant journal articles and papers.

MP632 Computer Based Management Systems

Two hours per week for one semester
Lectures, demonstrations, practical exercises, guest lecturers, seminars, site visits
Assessment: Assignment and project work 60 per cent Written test 40 per cent

A subject in the graduate diploma course in CAD/CAM.

This 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 familiarity with available software and packages and the evaluation of their applicability to particular cases.

A significant proportion of the subject is devoted to production control and material control systems, covering such functions as: Order processing, Materials Requirements Planning (MRP II), Manufacturing Resource Planning (MRP II); Purchase order generation; Stock control; Scheduling; Work in progress monitoring; Shop floor data collection; Shop floor performance monitoring.

Further topics include: The implications of just-in-time manufacture for computer based management systems; Interfacing management systems with CAD/CAM systems; The relationship between manufacturing management systems and financial management systems; Simulation applications and packages; Computer aided process planning; Classification and coding systems and their application; Expert knowledge systems and artificial intelligence.

References
Hartley, J. FMS at work. Bedford: IFS, 1984
Hyde, W. Improving Productivity by Classification Coding and Data Base Standardization. The Key to Managing CAD/CAM and Group Technology. New York: Dekker, 1981

In addition to the above, the student will be referred to journal references and software handbooks, manuals and brochures.

**MP651 Production Design 1**

Four hours per week for one semester

Assessment by assignments, projects and tests

A subject in the graduate diploma course in manufacturing technology.

*Automation and automation in manufacturing.*

This subject contains a substantial self study section or project.

**Textbooks**

As for MP351 and MP451.

**MP652 Production Design 2**

Two hours per week for one semester

Assessment by projects, tests and assignments

A subject in the graduate diploma course in manufacturing technology.


Calculations, design and analysis of processes parameters, sequences. Design of multi-rings dies for cold forging.

Project work: 30 hours of effective work. Product design to suit forging — diesets for diecasting and a layout of a dieset for a selected operation.

This subject contains a substantial self study section or project.

**Textbook**


**References**


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**Faculty of Engineering**

**MP711 Mass Transfer**

Four hours per week for one semester

A subject in the graduate diploma course in chemical engineering.


Projects: Students will undertake one or more specialised activities of a post graduate nature.

**Textbooks**


**MP712 Unit Operations**

Four hours per week for one semester

Assessment by examination and laboratory assignments

A subject in the graduate diploma course in chemical engineering.

Chemical manufacturing techniques: basic fluid particle systems, hydraulic classification, hindered setting, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.

Powder technology: handling and transport of powders, powder mixing, crushing, grinding and screening.

Non-Newtonian fluid dynamics: Newtonian and non-Newtonian fluid dynamics with examples from plastics processing industry.

Projects: Students will undertake one or more specialised activities of a post graduate nature.

**Textbook**


**MP713 Chemical Engineering Design 1**

Three hours per week in semester one

Two hours per week in semester two

Assessment by examination

A subject in the graduate diploma course in chemical engineering.

Exercises in the application to a variety of chemical engineering situations of dimensional analysis, treatment of experimental data, nomographs and graphical techniques.

Mass and energy balance calculations: flow sheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.

Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbooks**

See MP253.

**MP714 Stagewise Processes**

Five hours per week for one semester

Assessment by examination

A subject in the graduate diploma course in chemical engineering.

Design of mass transfer equipment. Selection of required number of stages; 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. Performance characteristics: behaviour of plate and packed columns, characteristics of packings, bubble caps, weirs and downcomers, flooding, hold-up and pressure drop, selection of optimum column diameter.
Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbook**

See MP343

**MP715** Heat Transfer

Five hours per week for one semester

A subject in the graduate diploma course in chemical engineering.

Review of the relevant parts of thermodynamics and heat transfer (first year); namely: conduction heat transfer, Fourier's law, natural and forced convection, Newton's Law of cooling, overall coefficients. Prediction of coefficients of heat transfer by the mechanisms of natural and forced convection, film and dropwise condensation, nucleate and film boiling. Radiation heat transfer including Stefan Boltzmann and Planck's law. Emissivity and absorptivity.

Finite element technique applied to multi-dimensional and transient heat transfer, LMTD, FT and e-NTU methods to define temperature driving forces. Thermal rating of shell and tube exchangers.

Heat transfer equipment: description and characteristics of shell and tube exchangers and alternative geometries such as corrugated plate and close tube arrangements, extended surfaces. Boilers, condensers, tube stills, furnaces, etc. with examples of their application in the chemical industry.

Review of Previous Work in Heat Transfer — the relevant parts of the syllabus in Thermodynamics and Heat Transfer (first year) will be reviewed, namely conduction heat transfer, conductivity, Newton's Law of cooling, overall coefficients.

Mechanisms of Heat Transfer — prediction of coefficients of heat transfer by the mechanisms of natural and forced convection, film and dropwise condensation, nucleate and film boiling. Radiation heat transfer including Stefan Boltzmann and Planck's law, black body concept, emissivity and absorptivity; radiation functions, shape factors, Beer's law.

Design Techniques — LMTD, FT and e-NTU methods to determine temperature driving forces, Thermal rating of shell and tube exchangers — selection of optimum tube/tube sheet arrangements, baffle cut and spacing; prediction of coefficients, temperature driving force, and pressure drop.

Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbooks**


**MP724** Chemical Engineering Design 2

Five hours per week for one semester

Assessment by examination

A subject in the graduate diploma course in chemical engineering.

Computer aided design: computer graphics including flowsheeting and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer.

Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries; methods of treatment and disposal; ecological considerations; legal requirements.

Excess of chemical plant design: design formulation; selection of optimum tubular arrangements; baffle cut and spacing; prediction of coefficients; temperature driving force and pressure drop.

Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbooks**

Ross, G. Computer Programming Examples for Chemical Engineers. Amsterdam: Elsevier, 1987

**MP716** Physical and Chemical Equilibria

Two hours per week for one semester

Assessment by examination and laboratory assignments

A subject in the graduate diploma course in chemical engineering. Students with a qualification in engineering are required to study the following material which forms the Semester 2 content of MP223 namely: physical equilibrium, bubble and dewpoints, phase diagrams, activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing; concentration, temperature and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbooks**


**MP751** Design Applications

Five hours per week for one semester

Assessment by examination

A subject in the graduate diploma course in chemical engineering.

Diffusional operations: drying, crystallisation, water cooling and humidification.

Diffusional operations: drying, crystallisation, water cooling and humidification.

Industrial applications of heat and momentum transfer.

Projects: Students will undertake one or more specialised activities of a postgraduate nature.

**Textbooks**


**MP821** Managing and Developing Organisations

Three hours per week for one semester

Assessment by examination

A subject in the graduate diploma course in entrepreneurial studies. This subject is intended to provide basic knowledge and skills to successfully establish an entrepreneurial organisation and manage the organisation through its development to maturity.

Topics include: approaches to organisation structure, characteristics of successful innovative organisations, motivation, performance of human groups, managerial styles. In addition, experiential exercises will be used to assist in the development of management and group skills. Students will also be required to study the stages of development of an entrepreneurial business and visit entrepreneurial type organisations and to report thereon.

**Textbook**


**References**


In addition, relevant journals will be cited as required.
MP841 Manufacturing Systems

Three hours per week for one semester

A subject in the graduate diploma course in entrepreneurial studies. This subject is intended to provide the knowledge and skills required:
- Identify the systems required to support the management and control of a factory.
- Design basic systems relevant to a small manufacturing enterprise.
- Specify the requirements for more complex systems.
Topics include: forecasting, production planning and scheduling, inventory control, facilities planning, quality and reliability, maintenance, and budgetary analysis and control.

Textbook

References

In addition, reference will be made to appropriate journals for specific topics.

MP902 Advanced Computing Techniques

Two hours per week for one semester plus one hour per week for one semester

Assessment by assignment and test


References
A list of references will be supplied by the lecturer.

MP904 Introduction to Computer Integrated Manufacturing

Two hours per week for one semester

Assessment by assignments, presentations and test


References
A list of references will be supplied by the lecturer.

MP911 Machines and Machining Systems

Three hours per week for one semester plus two hours per week for one semester


Flexible Manufacturing Systems (FMS).— their design and operation. Simulation of FMS. Expert systems in relation to machining and machining systems.

References
A list of references will be supplied by the lecturer.

MP912 Manufacturing Management Systems

Three hours per week for one semester plus two hours per week for one semester

A subject in the master of engineering CIM course. This subject covers the development of the systems required to support the management and control of a factory with integration into a total computer based manufacturing management system. Topics include the design of systems and algorithms required to: forecast future demand, control inventory, analyse process orders, plan materials procurement, plan manufacturing processes, develop work schedules, monitor product quality, plan maintenance strategies, allocate maintenance resources, predict plant failure and control manufacturing costs. Emphasis will be given to the use of operational research and optimisation techniques where appropriate. Use of artificial intelligence and expert knowledge systems for process planning will be discussed.

References
A list of references will be supplied by the lecturer.

MP913 Computer Aided Design

Two hours per week for one semester plus one hour per week for one semester

Assessment by assignments, projects and test


References
A list of references will be supplied by the lecturer.

MP914 CIM Systems Design and Analysis

Two hours per week for one semester plus one hour per week for one semester

Assessment by assignments and project

A subject in the master of engineering CIM course. This subject covers the techniques and procedures used for system feasibility studies and their development, implementation and maintenance, including both hardware and software. The subject brings together material covered in other subjects of the course. Techniques and approaches to initial system investigation and evaluation. Techniques of investment analysis. Financing alternatives and taxation implications. Effects of the CIM approach on plant design and layout. Systems simulation techniques, case studies. Ergonomics of working areas. Safety expenditure, handling and communication. Implication of introduction of CIM techniques on information processing capacity of an organisation. The effect of employment on functions and programs, employment forecasting and Gaining techniques. Human relations and industrial relations as related to the introduction of CAD/CAM technology. The roles of unions, employer and legal system in negotiation.

References
A list of references will be supplied by the lecturer.
MP921  Seminars on CIM
Forty hours over course
Assessment by reports
A subject in the master of engineering CIM course. A series of seminars on topical CIM subjects given by local and international experts. Students will be encouraged to actively participate in these seminars in order to develop their human relations skills and to acquire skills in negotiation.

MP922  CIM Project
Two hundred hours over course
Assessment by report and presentations
A subject in the master of engineering CIM course. This subject gives the student the opportunity to apply subject matter and supervising staff at Swinburne will help develop the student's competence. Students will work either individually or in small groups on approved problems under staff supervision. External supervisors may also be appointed.

SA296  Physical Science
Two hours per week for two semesters
Assessment by semester examination and reports
A second-year subject in the degree course in manufacturing engineering. A selection of six ten-hour units is made from a range of units offered at Swinburne. Each project requires a literature survey and theoretical and/or experimental investigation. Results and conclusions will be presented in a written report and oral presentations.

SC197  Chemistry
Three hours per week for one semester
A first-year subject in all degree courses in engineering. This subject provides students with an appreciation of the chemistry underlying engineering principles and practice. The course has a strongly practical basis. Review of preliminary principles (periodic tables, electronic structure of the atom, chemical bonding, states of matter, stoichiometry); thermodynamics, ionic and chemical equilibria; acids and bases, ionic reactions, the hydronium ion; el Textbook

SC198  Chemistry
Three hours per week for two semesters
A first-year subject for special entry students. This subject provides students with an appreciation of the chemistry underlying engineering principles and practice. The course has a strongly practical basis. Review of preliminary principles (periodic tables, electronic structure of the atom, chemical bonding, states of matter, stoichiometry); thermodynamics, thermodynamics and chemical equilibria; acids and bases, pH buffers; electrochemistry; organic chemistry, polymers, fuels.

SC582  Biochemistry
Three hours per week for two semesters
A subject in the graduate diploma course in chemical engineering. Chemistry of biological compounds (carbohydrates, lipids, proteins, nucleic acids); kinetics of enzymic reactions, catabolic pathways and energy pathways. Biochemical techniques (especially chromatographic techniques, spectroscopy). Mitochondrial formation of ATP, anabolic pathways. Biosynthesis of porphyrins, steroids. Biosynthesis of nucleic acid and proteins. Regulation of metabolism.

References

SC583  Physical Biochemistry
Two hours per week for one semester

Reference

SC791  Introduction to Hazardous Materials Chemistry
One hour per week for one semester
A subject in the graduate diploma course in risk management. Chemical principles of hazardous materials: toxic, corrosive, caustic, non-respirable, flammable, reactive materials. Vapour cloud characteristics and behaviour.

References
To be advised by lecturer at commencement of course.

SK297  Computer Programming
Two hours per week for one semester
A second-year subject in the degree course in manufacturing engineering which provides practical programming experience of FORTRAN and application to simple problems in production engineering. Students will be expected to complete several programming assignments. These will involve writing programs and using or modifying existing programs.

SK298  Computer Programming
One hour per week for two semesters
A second-year subject in the degree course in civil engineering which extends students knowledge of the application of computers in solving engineering problems.
Advanced aspects of FORTRAN or other suitable programming languages, including sub-programs, non-numeric applications and file handling on magnetic media. The course has a strong emphasis on practical work and students will be expected to devise suitable programming projects which are associated with their course.

**SK396 Computer Science**

Two hours per week in semester one

A third-year subject for the manufacturing engineering students to teach: computer architecture, with emphasis on special purpose systems, communications, control strategies including special purpose protocols such as MAP, control algorithms, database management and design, query packages, spreadsheets. Packages relevant to engineers, what is available and how to choose, introduction to software engineering, Introduction to graphics software.

**SK496 Computer Applications**

Two hours per week for one semester

A fourth-year subject in the degree course in manufacturing engineering which is intended to develop skill in writing programs in APL, BA and FORTRAN, of increasing levels of difficulty. Use of packages relevant to production engineering, and interpretation of results. Use of on-line programs and modifying them to suit individual problems. Simulation of machining operations and manufacturing processes.

**SK527 Computing Techniques**

Three hours per week for two semesters

Practical programming work

Assessment by progressive assignments and major project

Introduction to some business oriented applications, such as word processing, spreadsheets, etc.

An optional subject in the graduate diploma course in industrial management and manufacturing technology which consists of a selection from: algorithms and algorithmic process; advanced language and language techniques, special purpose languages, manufacturing engineering, design and database systems, simulation techniques, hardware and operating systems, computer hardware and software libraries, time-sharing networks and information services.

Textbooks:

Suitable textbooks and general reading will be advised during the lectures.

**SK631 Computer Programming**

Two hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Introduction to the use of personal computers. Practical introduction to the use of major packages for word processing, spreadsheets and database.

Discussion of issues relevant to the choice of computer systems and the important characteristics of a computer in use.

**SM197 Engineering Mathematics**

Four hours per week for first semester and three hours per week for second semester

A first-year subject in all degree courses in engineering which 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.

**SM198 Mathematics Alternate**

Seven hours per week for first semester, four hours per week for second semester, excluding the first and final two weeks, which will be seven hours per week

A first-year mathematics subject for the Special Entry program.

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 the mathematical groundwork of Year 12 Maths B.

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.

**SM287 Engineering Mathematics A**

Four hours per week of integrated instruction and practice for one semester

A second-year subject in the degree course in manufacturing engineering.

Statistics: probability, distributions for discrete and continuous variates, sampling distributions, confidence intervals, tests of hypothesis, t-tests, F and $X^2$ distributions, analysis of variance, correlation and linear regression, multiple regression, factor analysis, linear programming, quality control, use of minitab package.

**References**


Berkeley, D. Calculus, New York: Saunders College, 1984

Shenk, A. Calculus and Analytic Geometry 4th edn, Glenview: Scott, Foresman, 1984


Penguln, W. Probability and Statistics for Engineers and Scientists.

Devore, J.L. Probability and Statistics for Engineering and the Sciences.


Dowds, J.L. Probability and Statistics for Engineering and the Sciences.


Malone, D.M. Probability and Statistics for Engineers and Scientists.


SM292 Engineering Mathematics
Four hours per week of integrated instruction and practice for two semesters
A second-year subject in the degree course in civil engineering.
References

SM294 Engineering Mathematics
Four hours per week for integrated instruction and practice for two semesters
Reference

SM295 Engineering Mathematics
Six hours per week for fifteen weeks

SM297 Engineering Mathematics B
Four hours per week of integrated instruction and practice for second semester
References

SM298 Engineering Mathematics
Three hours per week of integrated instruction and practice for two semesters
Textbook

SM392 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
A third-year subject in the degree course in civil engineering. Numerical solution of linear and non-linear algebraic equations, introduction to finite difference methods for ordinary and partial differential equations, applications. Linear programming and transportation.
Prescribed course material

SM394 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
Prescribed course material

SM398 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
Prescribed course material

References
Hedley, G. Linear Programming. Reading, Massachusetts: Addison-Wesley, 1969

SM492 Engineering Mathematics
Three hours per week for the fourth year of the degree course in civil engineering. Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations. Applied probability: queuing theory; probability modeling, extreme value theory.
References
SM498 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester.
A four-year subject in the degree course in mechanical engineering.
Introduction to finite element methods: approximation, basis functions, quadrature, weighted residual methods, ordinary and partial differential equations.
References

SM631 Mathematics
Four hours per week for one semester.
A subject in the undergraduate course in telecommunications systems management.
Reference
Ryan, B.F., Joiner, B.L. and Ryan, T.A. Minintab Handbook. 2nd edn, Boston: Duxbury, 1985

SM741 Statistics and Reliability
Two hours per week for one semester.
A subject in the graduate diploma course in risk management.
References

SM905 Advanced Mathematical Methods
Two hours per two weeks for two semesters.
Assessment by tests and examination.
A subject in the master of engineering CIM course.
This subject covers a range of mathematical and statistical methods at a level beyond that achieved in undergraduate courses, that are appropriate for applications in CIM.
Topics will be selected from the following list:
Computational methods: linear algebra with applications to sparse matrices and three dimensional geometry; finite difference methods in ordinary and partial differential equations, finite element and boundary element methods.
Statistics and operations research: linear models, forecasting linear and non-linear optimisation, queueing theory, stochastic processes, inventory control, reliability theory.

References

SP191 Building Science
Three hours per week for one semester.
A first-year subject in the diploma course in building surveying, which introduces students to basic scientific principles underlying the behaviour of physical and chemical systems.
Measurement: quantities, units, SI.
Waves: types, propagation, speed, reflection, transmission, interference, standing waves, forced oscillations, resonance. Thermal physics: temperature, heat, internal energy, first law of thermodynamics, thermal conductivity, specific heat, calorimetry, adiabatic and isothermal processes.
Optics: mirrors, lenses, diffraction, resolution, optical instruments. Physics of the solid state: crystal structure, lattice parameters, bonding of crystals, force-separation and potential energy separation curves, equilibrium atomic separation. Structure and subdivisions of matter: atoms, and molecules; compounds and chemical reactions; acids, bases, oxidation; reduction principles of corrosion; the chemical processes involved in: the formation and weathering of soils, the constituents and treatment of natural water and domestic affluents from a chemical viewpoint. Solute treatment of air pollution.
The practical work supplements the lectures. Students are placed in practical situations in order to encourage logical thinking in the simple treatment of air pollution.

SP197 Physics
Three hours per week for first semester and two hours per week for second semester.
Assessment by examination for theory, and continuous assessment for practical work.
A first-year subject in all degree courses in engineering.
Linear and rotational mechanics: waves in elastic media; optics; electricity and magnetism; gravitation; fluid mechanics; kinetic theory of gases; atomic physics. The practical course is comprised of eleven experiments on dynamics, wave motion, electricity and magnetism, physical optics and atomic physics. In addition, there are a number of problem solving tutorials available.

Textbooks

SP294 Engineering Physics
Two hours per two weeks for two semesters.
Assessment by examination.
A second-year subject in the degree course in electrical and electronic engineering.
Relativity: inertial frames, covariance, Michelson-Morely experiment; special relativity, space-time, mass and energy.
Quantum mechanics: quantum phenomena, wave-particle duality, probability and wave functions, Schrodinger's equation and applications; tunneling; Heisenberg uncertainty principle.
Solid state physics: many-body quantum mechanics and quantum conduction in metals; zone and band theories; intrinsic semiconductors, extrinsic semi-conductors and devices.
Electromagnetic radiation: Maxwell's equations; continuity and wave equations; boundary conditions; propagation, reflection and transmission of radiation; lasers and holography.
Nuclear physics: nuclear structure, properties, stability, reactions and chain radiation; fission, fusion and nuclear power.

Textbook
SP419  Occupational Health and Safety

Four hours per week for one semester
Assessment by examination and assignments

A subject in the graduate diploma course in chemical engineering.

Environmental hazards (21 hours)
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.
Hazard recognition, evaluation and control.
Heat and ventilation. Measurement of dusts and fumes, bio-effects.
Body temperature regulation, effects of heat and cold.
Radiation: ionising and non-ionising (including ultra-violet, visible light, infra-red, radio frequency and lasers). Identification and bio-effects.
Hazard assessment and control.

Toxicology (15 hours)
Toxic substances, mechanisms of action and orthogenic 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, PCB solvents, organic chemicals, silica, asbestos, allergens and pesticides.
Evaluation and control measures.

Safety technology (15 hours)
Chemical safety. Handling, storage and transport of dangerous and toxic chemicals.

Law and administration (9 hours)
Principles of occupational health and safety laws. Role of industrial tribunals and the courts.
Employers’ liability. Court decisions concerning industrial injury and compensation.
Industrial relations law. Safety issues as part of Award Log of Claims.

SP740  Anatomy and Physiology

One hour per week for one semester

A subject in the graduate diploma course in risk management.
Introduction to anatomy of human skeletal and muscular systems.
Physiology of cardio-vascular, neural and neuro-muscular systems.
Anthropometry related to workspace and task design and evaluation.
Biomechanics of work tasks.

References

SP750  Radiation Physics

One hour per week for one semester

A subject in the graduate diploma course in risk management.
Introduction to electronic particle radiation: particle types, measurement of energy, decay, sources.

References
To be advised by lecturer at commencement of course.
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