Please note

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### 1986 Calendar

#### January
- **1**: New Year’s Day
- **2**: Swinburne re-opens
- **14**: HSC results published
- **27**: Australia Day

#### February
- **4&5**: SCT further enrolment period for 1986
- **5&6**: SIT Engineering re-enrolments commence
- **7**: SCT semester 1 commences
  - SIT full-time classes in Certificate of Business Studies begin
  - SIT later year teaching begins Art
  - SIT teaching begins final year Engineering degree
- **10**: SCT all classes commence except full-time Certificate of Business Studies
  - SIT first year Art commences
  - SIT later year teaching begins Applied Science, Arts and Engineering (except final year degree)
- **17**: SCT all classes commence except full-time Certificate of Business Studies
  - SIT classes end for Easter break
  - SCT classes end for Easter break
- **20**: SIT new enrolments commence for Round 2 offers through VUAC
- **24**: SIT later year teaching begins Business
  - SIT first year undergraduate teaching commences Applied Science, Arts, Business and Engineering

#### March
- **10**: Labour Day
- **26**: SIT classes end for Easter break
- **27**: SCT classes end for Easter break
- **28**: Good Friday
- **31**: Easter Monday

#### April
- **1**: Easter Tuesday
- **2**: SCT classes resume after Easter break
- **3**: SIT classes resume after Easter break
  - SIT and SCT last day for applications for refund of fees
- **11**: SCT last day for subject variations to enrolments for semester 1
  - SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure
- **25**: Anzac Day
- **30**: SIT graduation ceremony

#### May
- **9**: SIT and SCT classes end mid-semester break
- **19**: SIT classes resume
- **26**: SCT classes resume
- **28**: SCT certificate and award presentation ceremony

#### June
- **9**: Queen’s Birthday
- **20**: SIT Business semester 1 examination period begins
- **23**: SCT semester 1 examination period begins (except SIT Business)
- **30**: SIT inter-semester break begins for Art

#### July
- **4**: SCT semester 1 examinations end
- **7**: SCT inter-semester break commences
- **11**: SIT examinations end
- **14**: SIT inter-semester break commences for Applied Science, Arts, Business and Engineering
- **21**: SCT semester 2 commences

#### August
- **22**: SIT and SCT classes end mid-semester break

#### September
- **1**: SIT classes resume
- **5**: SCT last day for subject variations to enrolments for semester 2
  - SIT last day for amendments to enrolments without penalty of failure
- **8**: SCT classes resume
- **17**: SIT graduation ceremony
- **25**: Show Day

#### October
- **31**: SIT and SCT last day for application for awards for students completing their courses in December 1986

#### November
- **4**: Melbourne Cup Day
- **7**: SCT formal classes end
- **10**: SCT end of year examinations commence (internal and external)
  - SIT semester 2 examination period begins
- **21**: SCT examinations end (external)
- **28**: SCT examinations end (internal)
  - SIT examination period ends

#### December
- **8**: SIT re-enrolments for Art
- **11**: SIT and SCT re-enrolments for 1987 commence (except SIT Art and Engineering)
- **23**: Swinburne closes for Christmas break
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 or 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.
This Handbook is published both as a whole and in separate sections; one for each faculty of Swinburne Institute of Technology and one for Swinburne College of TAFE. These separate sections are available from the Information Office. The section indicator denotes the general position in the book of each section.
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SWINBURNE INSTITUTE OF TECHNOLOGY

Degrees
Bachelor of Applied Science (BAppSc)
- Applied Chemistry .......................................... AS7
- Biochemistry .................................................. AS7
- Biophysics ...................................................... AS8
- Computer Science .......................................... AS9
- Environmental Health .................................... AS11
- Instrumental Science ..................................... AS6
- Mathematics .................................................. AS10

Bachelor of Arts (BA)
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- Graphic Design .............................................. AR4
- Historical & Philosophical Studies .................. AT6
- Italian ........................................................... AT13
- Japanese ........................................................ AT14
- Literature ...................................................... AT9
- Media Studies ............................................... AT11
- Political Studies .......................................... AT18
- Psychology .................................................... AT16
- Sociology ..................................................... AT22

Bachelor of Business (BBus)
- Accounting .................................................... BS5
- Data Processing ............................................. BS5
- Economics - Marketing .................................. BS6

Bachelor of Engineering (BEng)
- Civil Engineering .......................................... EN13
- Electrical Engineering .................................. EN16
- Manufacturing Engineering ......................... EN18
- Mechanical Engineering .............................. EN22

Diplomas
Diploma of Art (DipArt)
- Film and Television ........................................ AR3
- Graphic Design .............................................. AR4

Diploma of Building Surveying ........................ EN14

Graduate Diplomas
- Accounting .................................................... BS8
- Air-conditioning .......................................... EN23
- Applied Colloid Science ................................. AS12
- Applied Film and Television ......................... AS13
- Applied Social Psychology ........................... AT25
- Biochemical Engineering .............................. EN19
- Biomedical Instrumentation .......................... EN20
- Business Administration ............................. BS9
- Chemical Engineering ................................ EN20
- Civil Engineering Construction ................... EN15
- Computer Simulation .................................. AS12
- Corporate Finance ....................................... BS10
- Digital Electronics ......................................... EN17
- Entrepreneurial Studies ............................... EN13
- Industrial Management ................................. EN20
- Industrial Microbiology ................................ AS12
- Japanese ....................................................... AT27
- Maintenance Engineering ............................. EN23
- Management Systems .................................. RS10
- Manufacturing Technology ......................... EN20
- Organisation Behaviour ................................ BS11
- Scientific Instrumentation .............................. AS13
- Telecommunication Systems Management .... EN18
- Urban Sociology ............................................. AT28

Degree of Master
Programs by coursework
- Master of Applied Science in
  Applied Colloid Science ............................... AS3
- Master of Engineering in
  Computer Integrated Manufacturing ............... EN21

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SWINBURNE COLLEGE OF TECHNICAL AND
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- Office & Secretarial Studies ......................... CT32
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Certificates of Technology
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- Human Development & Society CT83
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- Fitting & Machining CT58
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- Introduction to School Laboratory Practices CT75
- Introduction to Welding CT59
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- Toolmaking CT58
- Welding CT59

Programs for Mildly Intellectually Disabled Students
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- Transition Program CT80
- Vocationally oriented Evening Classes CT80
- Work Education Program CT80

Technician Certificates
- Building Construction Certificate CT13
- Building Foreman CT14
- Building Inspector CT14
- Clerk of Works CT14
- Electrical/Electrical Industrial Control CT44
- Electrical/Industrial Electronics CT44
- Mechanical (Fluid Power) CT54
- Mechanical (Mechanical Drafting) CT54
- Mechanical (Plant Maintenance) CT54
- Plant Services Detail Drafting CT21
- Plumbing (Gasfitting) CT20
- Plumbing (Heating, Ventilation & Air-conditioning) CT20
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- Production CT55

Tertiary Orientation Programs
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- Science/Engineering (full-time) CT71
- Science/Engineering (part-time) CT71
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 1985 were 2,824 full-time and 2,863 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 Tertiary Orientation Program levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1985 were 882 full-time and 3,139 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 countries 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, charged three cinquefoils counter-charged.

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

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

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

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

Swinburne Council

Membership as at 31 August 1985

Appointees of the Governor-in-Council
J J Eastwood, BA(Hons), DipEd(Melb)
M S Fallon, BA(Flint), ALA, ALAA
G W Fary
J F Harvey, B Juris, LLB(Mon), GradDipAcc(PCA), ACA,
Barrister and Solicitor (Vic) Supreme Court
M A Puglisi, LLB(Melb), Barrister and Solicitor (Vic) Supreme Court

Appointee of the Council of the City of Hawthorn
J A Wunderlich, MSc(Syd), Dr es Sc(Paris), ARACI

Members elected by the Council of Swinburne
W R S Briggs, PhD, BSc(Hons)(NSW), DipChemEng(STC),
ASTC, ARACI (Vice-President)
K H Clarke, MSc(Melb), ARCS, FInstP, FAIP, FACPSM, MIBME
J M Day, BE(Mech and Elec)(Syd), FIEAust, SME
L E A Orton, MArch(C'nell), DipArch(DSN)(Melb), LFRAIA,
RIBA (Vice-President)
D M Reilly, MA(Mon), ALAA
N P Watson, AASA, ACIS (President)
2 vacancies

Members ex officio
W R Longworth, PhD, MSc(Manc), CChem, FRSC, FRACI,
FACE (Principal Director and Chief Executive Officer)
F G Bannon, BCom(Melb), FASA, ACIS, LCA (Director,
Administration)
R S Davie, BE(Adel), CEng, FIProdE, FIEAust, MACE
(Director, Swinburne Institute of Technology)
L M Jenkins, BCom, DipEd(Melb), FASA, MACE (Director,
Educational Services and Deputy Principal Director)
B J Macdonald, BEc(Mon), DipEd(Rusd) (Director,
Swinburne College of Technical and Further Education)

Member elected by Academic Board
N J Allport, BCom, MBA(Melb), BEc(Mon), AASA(Sen)

Member elected by Board of Studies
P C Quail, BEc, DipEd(Mon)

Member elected by academic staff, SIT
H Zimmerman, BA(Hons), LLB, DipEd(Melb)

Member elected by academic staff, SCT
D S Amato, BEng(SIT), DipEd(Haw), GradIEAust

Member elected by general staff
N H Nilson

Member elected by students, SIT
G Campagna

Member elected by students, SIT
K A Smith

Senior staff

Principal Director
W R Longworth, PhD, MSc(Manc), CChem, FRSC, FRACI,
FACE

Deputy Principal Director
L M Jenkins, BCom, DipEd(Melb), FASA, MACE

Director, Swinburne Institute of Technology
R S Davie, BE(Adel), CEng, FIProdE, FIEAust, MACE

Director, Swinburne College of TAFE
B J Macdonald, BEc(Mon), DipEd(Rusd)

Director, Administration Division
F G Bannon, BCom(Melb), FASA, ACIS, LCA

Director, Educational Services Division
L M Jenkins, BCom, DipEd(Melb), FASA, MACE
Security Department
Chief Security Officer
S.A. Sharwood
Safety Co-ordinator
G.N. Rowe, BEng(Bend), GradDipEd(Haw), GradDipOccHazMan(Ballf)
Swinburne Press
Manager, Swinburne Press
A.D. McNaughton
Executive Officer
A.J. Miles, BSc(Melb), BEd(Mon)

Educational Services Division
Director
L.M. Jenkins, BCom, DipEd(Melb), FASA, MACE
Registrar
G.L. Williamson, BSc(Adel)
Swinburne Librarian
W. Linklater, BA, DipLib(NSW), DipEdTech(CNAA), ALAA
Manager, Computer Centre
M.O. Plunkett, BEng(Adel)
Co-ordinator, Student Health and Welfare Unit
M. Aaral, BA(Hons(Melb), DipSocStud(Melb), MAPS
Head, Education Unit
B. Hawkins, BA(NewEng), MEd(Melb), MACE
Head, Audio-visual Services
D.B. McAdam, BA(SIT)
Manager, Central Technical Workshops
G. Nettleship, CEng, MIMarE

Registrar's Office
Registrar
G.L. Williamson, BSc(Adel)
Deputy Registrar and Head of Student Administration
R.T. Dawe, BA, LLB(Mon)
Assistant Registrar
P.E. Kocak, BEng(LaT)
Administrative Officers
L. Scheuch-Evans, BS in Foreign Service (G'town)
H.M. Ralston, BCom(Melb)
Admissions Officer
M.J. Foley
Examinations Officer
M. Botterill
Information Officer
W. Leishman
Statistics Officer
I.S. Watkins, BA(Victoria)
Faculty Secretary, Applied Science
J.S. Urre, BSc(Aberd), DTA(ICTA)
Faculty Secretary, Arts
C. Hoernel, BA(JohnsH)
Faculty Secretary, Business
V. Stiles, BA(Melb)
Faculty Secretary, Engineering
A.L. Dews, ARMIT

Library
Swinburne Librarian
W. Linklater, BA, DipLib(NSW), DipEdTech(CNAA), ALAA
Administration
H.J. Sweeney, DipLib(RMIT), ALAA
Audio-visual
B. Nichol, BSocScLib'ship(RMIT)
M. Hawkins, CertAppSocScLibTech
Periodicals
K.M. McGrath, BA(Mon), GradDipLib(RMIT), ALAA
D. Zakis, BA(SIT), AssocDipLib(RMIT)
Technical services
K.M. Villwock, BA(Mon), ALAA

Acquisitions/collection management
M. Wanklyn, BA(LaT), AssocDipLib(RMIT), ALAA
J. Fegan, DipLib(RMIT)
D.R. Ethell, CertAppSocScLibTech
J.M. Lindner, BSocScLib'ship(RMIT), DipLibInfocSc(Mon), ALAA
Cataloguing
D.J. Doherty, BA(Adel), ALAA
J.E. Fizelle, BA(Hons(Melb), MACE
R. McColl, BA(SIT), GradDipLib(RMIT), ALAA
V. Bott, BA(Hons(Mon), DipLibUNSW
S. Holleyer, BA, DipEd(Melb), DipLib(MCAE), DipLibInfocSc(Mon), ALAA
J. Meggessy, CertAppSocScLibTech
Readers' services
P.C. Simmenauer, BA, DipLib(NSW)
Circulation
E. Carter, BSocScLib'ship(RMIT)
Reader education
B.J. Donkin, DipArts(SIT), GradDipEd(Haw), ALAA
Reference
I.A. Douglas, BA(N'cle), MSc(Strath)
Reference and reader education
J.M. Agar, BA(Melb), GradDipLib(CCAPE)
C. Bates, BA(LaT)
B.A. Camfield, BA(SIT), AssocDipLib(RMIT)
L. Murdoch, BA(Qld), DipLibNSW
G. Turnbull, BEd(LaT), GradDipLib(RMIT)
GradDipTeach(BrisCAE), AssocDipFineArts(QCA)
K. Walsh, BA(SIT)
R. Watson, BAppScLibStud(WAIT)

The reference and lending library is housed in a modern five-storey building with capacity for 600 readers. There are 48 full-time staff. All books, periodicals and other materials in the collection are available for use in the library and most may be borrowed. Copying facilities are available at reasonable costs. The major purpose of the library is to supplement and support formal course instruction and to provide ample opportunity for recreational and general reading.

In 1984 the collection comprised 230,810 items. In addition, 3,134 periodical titles are received, including a wide range of media on all types of subjects. Formal and informal instruction is given to students on the use of these resources, and also in relating their courses, and also in relating their specialist courses to society as a whole. 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 Committee, the Academic Board, and the Board of Studies.

In addition, any professional people from commerce, industry and the public services in the region of Swinburne, and members of the general public are welcome to read or use audio-visual facilities within the library, provided that they, too, accept the rules. In general they are not entitled to borrow from the library. The Swinburne Librarian, or the senior staff member on the premises may refuse entry to the library to any person not registered as an approved 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.

Full-time and part-time students of the Institute and the College.

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.

Mid-semester breaks

Monday to Thursday — 8.45am to 10.00pm
Friday — 8.45am to 8.30pm

Inter-semester break

Monday to Thursday — 8.45am to 10.00pm
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 10.00am to 5.00pm
Depending on demand, from early in each semester, up to and including the Saturday at the end of the first week of examinations.

Sunday 1.00pm to 5.00pm
Depending on demand and resources, a limited number of Sundays towards the end of each semester.

Library loans to students

Loans to students are available only on acceptance of the following conditions:

General

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

Borrowing periods

Fortnightly loans

The normal loan period for most books and pamphlets is a fortnight, and a week for audio-visual material (excluding video cassettes and slides). 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 be borrowed for a period of two hours for use in the library, except as specified above, and will be issued 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.

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’), vertical file material, microforms and those materials marked ‘Not for loan’ or ‘Display’.

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

Reservations for all material on loan may be made at the reservations section of the Loans Counter, and for material located in Stack, at the Enquiries Desk.

Fines

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.

F Fortnightly loans and audio-visual 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 or part thereof overdue to a maximum of $5.00 per item, suspension of borrowing privileges and withholding of examination results.

Overnight loans — per item
First day: $0.50 per hour late. For each day thereafter: a further $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.

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

Loss of an identity card must be reported immediately to the Overdues Section, level 2, library otherwise the library can take no responsibility for items borrowed on that card. These are not transferable and are valid only when signed. A current card must be produced when borrowing otherwise service may be refused. Lost or damaged cards may 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, or in the immediate vicinity of the drink vending machines, is not allowed in areas of the library open to the public.

Playing games in the library is not allowed.
Swinburne services

Student Health and Welfare Unit

Unit staff
Co-ordinator
M. Algar, BA(HonsPsych), DipSocStud(Melb), MAPsS
Counselling
M. Algar, BA(HonsPsych), DipSocStud(Melb), MAPsS
L. Moloney, MA(ClinPsych)(Melb), MA(EdPsych)(Edin), MAPsS
K. Olsen, BA, DipSocStud(Melb)
M.A. King, BA(Bombay), MA(ClinPsych)(ANU), MAPsS
Careers information
S. Wayth, BA(Melb), GDipLibStud(WAIT), ALAA
Employment and housing
B. Graham, BAppSc(Pharm)(TCAE)
J. Fischer, RN, RM(Vic)
A. Hart, RN(Vic)
Chaplain
W. Hamilton, BA(GIAE), DipTheol(MCD), GradDipAppSocPsych(S1T)

Student health and welfare services

The following services are available to all students:
- Counselling
- Careers library
- Health
- Housing
- Employment
- 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, BA Building
Telephone: 819 8025
The Student Counselling Service is available to students, staff, prospective students, parents and partners of students. The service is free and strictly confidential.
Counselling is concerned with helping people, individually and in groups, with personal problems, vocational and career decision and planning, course and career information, financial concerns and study problems.
Some areas of student concern are: 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 pre-marital counselling, relationships, disabilities, sexuality, family, financial problems, career planning and decisions, scholarships and student allowances.
The counselling service is open from 9.00am to 5.00pm throughout the year and remains open for part-time students on Monday evenings until 6.30pm or at other times by appointment.

Careers library
Location: within the Student Counselling Service, room 206, level 2, BA Building
Telephone: 819 8025
To assist students and prospective students in their choice of careers and courses, the Careers Information Counsellor maintains a comprehensive library including information on a wide range of courses at Swinburne and elsewhere: apprenticeships, evening classes, middle-level courses in TAFE colleges, tertiary and postgraduate courses.
The library is for the use of all Swinburne students and staff, prospective students and schools within the area.
The Student Employment Office provides more specific information on employers and employment opportunities.
Student health
Location: room 207, level 2, BA Building
Telephone: 819 8483
The service is available to tertiary students, College of TAFE students and staff (for emergency treatment only) and is free and strictly confidential.
Services provided include emergency service, general first-aid, advice on medical problems, contraceptive advice, information on sexually transmitted diseases, advice on nutrition, immunisation, eye tests, hearing tests, pregnancy testing, cardio-pulmonary resuscitation and first-aid lectures, referral service, e.g. dentist, physiotherapist.
The health service is open from 8.45am to 5.00pm Monday to Friday, and remains open on the first Monday of the month until 6.30pm for the benefit of part-time students. The doctor is available by appointment three hours daily.

Student housing, part-time and vacation employment
Location: top floor, Student Union Building (above the Cafeteria)
Telephone: 819 8541
The housing service provides addresses of a wide range of accommodation including full board, single rooms, houses and flats, and hostels. Many students also use the service to find other apprentices 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 8.45am to 5.00pm Monday to Friday (later by appointment for the convenience of part-time students).

Student employment
Location: room 206a, level 2, BA Building
Telephone: 819 8445
Assistance is provided for students seeking full-time employment.
Several services are available including:
— an employment register and placement service for students seeking full-time employment and details of major recruiting campaigns;
— assistance with job application and interview techniques, individually or in group workshops;
— personal guidance and support for students in their search for appropriate employment;
— an 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 8.45am to 5.00pm Monday to Friday (later by appointment for the convenience of part-time students).

Students with a disability
All of Swinburne's educational, recreational and social/cultural activities are made readily available to students with a permanent or temporary disability.
Students with special needs are encouraged to contact the Student Counselling Service prior to enrolment. The counselors can advise on career planning, special study needs, examination arrangements, access to buildings, use of lifts, telephones and parking facilities, etc.
The Student Counselling Service is located on level 2, Business and Arts Building.
Telephone: 819 8025

Swinburne Chaplain
Location: room 401a, top floor, Student Union Building (above the Cafeteria)
Telephone: 819 8489
The Chaplain is not employed by Swinburne but has a wide responsibility to students and staff regardless of religious affiliation or lack of it.
The Chaplain is available for confidential counselling but most of his work is done through informal contact with students and staff.
He is involved in the community life of Swinburne and takes part in student activities, giving help and support or advice if needed. He also organises discussions and camps.
Students and staff are invited to drop in at any time. New students, in particular, are invited to come and introduce themselves.

Student allowances

Loans
With the approval of the Loans Fund Committee, long-term and short-term financial assistance may be obtained from the following loan funds:
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

Assistance schemes

Tertiary Education Assistance Scheme (TEAS)
The Commonwealth Government provides financial assistance for full-time study. This includes courses at technician, certificate, diploma, degree and postgraduate diploma level. To be eligible, students must also meet certain requirements regarding previous study, other awards held, etc.
As from 1 January 1986 the following benefits are available subject to a means test:

Maximum living allowance
for dependent students at home $2,477 p.a.
for dependent students away from home $3,821 p.a.
for independent students $3,821 p.a.
maximum allowance for dependent spouse $2,220 p.a.
allowance for dependent child $832 p.a.

Incidentals allowance
Institute students $70 p.a.
College of TAFE students $30 p.a.

Applications may be made after enrolment in a course. Pamphlets and application forms are available from the Student Counselling Service, room 206, Business and Arts Building or the Commonwealth Department of Education, 17 Yarra Street, Hawthorn 3122.

Aboriginal Grants Schemes
These schemes provide assistance to secondary and post-secondary students of Aboriginal or Torres Strait Island descent.
Details are available from the Student Counselling Service, room 206, Business and Arts Building or the Commonwealth Department of Education and Youth Affairs, 17 Yarra Street, Hawthorn 3122.

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.
For other types of concession tickets, e.g. air travel, students should contact the Student Union or the Sports Association.
Postgraduate awards
The Commonwealth Department of Education provides the following awards for postgraduate study:
— TEAS (for postgraduate diploma courses. See information on TEAS in this Handbook)
— Postgraduate awards at the colleges of advanced education
— Postgraduate research awards
Postgraduate course awards (at universities)
Postgraduate course awards
Selection for awards is based on academic merit. Applications should be made to the Registrar of the college/university where you wish to undertake study, in September of the preceding year.
There are a number of other postgraduate awards available, both locally and overseas. Information about these may also be obtained from the Registrar's Office.

Scholarships and awards
The following are general awards for which Swinburne students may be eligible. For specific awards and prizes please consult individual faculty or department entries in this Handbook. Details of these and other awards may be obtained from the Registrar's Office and teaching departments.

Australian Railways Union — W.H. O'Brien Memorial Scholarship
(For disabled students or students from sole-parent families)
This scholarship will be awarded after consideration of the results of the candidate's year's work and school reports. The scholarship is available for any level of study but candidates must have been in continuous attendance at a Victorian school in 1985, and must be dependent children of financial members of the Australian Railways Union. The scholarship is tenable for four years and carries an allowance of $200 p.a. Applications close 13 December 1985.

Dafydd Lewis Trust Scholarships
These are available to male students who will be proceeding with degree level study in 1986; they are subject to a means test and certain conditions of eligibility. These scholarships provide for the payment of all fees incidental to the approved courses, as well as allowances for books, food and clothing. Applications will close at the end of November.

Gowrie Scholarships
These are available only to members of the Australian Armed Forces who served in a combat area during the 1939-1945 war, or to their direct descendants. There are (a) postgraduate research scholarships, value: approximately $3,500 p.a., for two years; and (b) tertiary scholarships, value: $250 p.a. for the duration of the course. Applications close in October and September respectively.

Rotary Educational and Vocational Scholarships for Overseas Study
These are available to outstanding graduates, undergraduates, professional journalists, teachers of the handicapped and to those seeking further experience overseas in technical, artistic or other vocations. Value: covers travel, educational and living expenses for one academic year. Applications close 1 August.

Soldiers' Children Education Scheme
Benefits and allowances are available only to eligible children of deceased and incapacitated veterans. The scheme ranges from secondary to tertiary courses. Value: from $41-$57 per fortnight for secondary students and from $78-$137 per fortnight for tertiary students.

Walter Lindrum Memorial Scholarships
These are available to students who are qualified to enter the first year of an approved full-time diploma or degree course at an approved technical institution. Value: $500 p.a. Applications close at the end of November.

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. Campbell, 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 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.

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, student 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 typesetting service with a range of IBM Selectric Composer faces.
Swinburne Press is registered under the Business Names Act 1962 and is a recognised printing and publishing house.

Computer Centre
Manager
M. Plunkett, BEc(Adel)
Enquiries
R. Hodges
Senior Programmer
R. Schorer, BSci(Hons)(Mon)
Operations Supervisor
S. Lascelles
Telephone: 819 8509
The Swinburne Computer Centre provides computing and data processing facilities for teaching, research and administrative applications. In 1986 three processors will be made available to handle the total workload.
All machines are located in the McPherson Engineering Building. The main computers are the FACOM M180N and the IBM 4341 configurations. The M180N, installed in 1982 is configured with 4300 mega-bytes of disc storage, two communications processors, a printer, card reader and four tape drives. Real memory of the central processor is twelve mega-bytes. The system supports an extensive terminal network with VDU’s and hard copy devices distributed through the Arts, Business, Applied Science and Engineering faculties. Batch or interactive access to a large range of programming languages (including BASIC, FORTRAN, COBOL, RPG, LISP, APL and PASCAL) and software packages (including SPSS, SAS, IMSL, NAG, SSLI, TWOPEP, NASTRAN, FORE-SIGHT, NETCODE) is provided. Software relating to Graphics, General Ledger, Financial Modelling and Data Base is used in several courses.

The IBM 4341 is a mainframe system devoted to computer-aids research. In addition, some CDC (CADICAM) machines, the cornerstone of a grant from IBM Australia, support eight high resolution graphics terminals, numerous synchronous terminals and several plotters. The IBM system will also be interfaced to a number of numerical control machines and robots as development of this system progresses. Applications software includes CADAM and CATIA. The third machine, a PDP 11/40, is located in EN307. This system has extensive disk space and a network of some twenty-four terminals and dial-up facilities. It is primarily devoted to computer-aided instruction.

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 terminal connected to either the Facom, PDP 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 and a group of technicians who are available at all times to assist and answer questions. Intending users of audio and video studio recording facilities are advised to consult with the staff of audio-visual services well in advance of the recording date.

The system has extensive disk space and a network of some twenty-four terminals and dial-up facilities. It is primarily devoted to computer-aided instruction.

The Computer Centre produces a publication ‘User News’ each month throughout the academic year. Designed to assist and answer questions of users in the application of Swinburne’s hardware and software facilities, it is commended to all students.

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
Education Officer (educational technology)
K. Anderson, MA(Brad), BSc(Melb), DipEE, MIE Aust, MACE, TTTC, 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.

Audio-Visual Services
D. McAdam, BA, 819 8010

General enquiries: 819 8031

Located in room BA306 of the Business and Arts Building, the audio-visual services are available for use by all full-time and part-time staff and students of both divisions. Before planning the use of the services, students should consult with their lecturer or instructor and obtain agreement on the planned assignment and bring the signed agreement to audio-visual services.

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. Intending users of audio and video studio recording facilities are advised to consult with the staff of audio-visual services well in advance of the recording date.

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

Information Office

Information Officer
W. Leishman, 819 8460
Schools Liaison
R. Jamiessen, DipAppSc(NMT), Grad Dip Car Ed(RMIT), 819 8388

General enquiries: 819 8444

The Information Office directs internal and community relations activities. The duties include writing and compiling the Swinburne Newsletter, staffing the Swinburne Enquiries Office, liaising with the media, placing course advertising, disseminating course information, publicising the activities of Swinburne Institute of Technology and Swinburne College of TAFE and arranging visits to Swinburne by interested groups.

The Information Office also co-ordinates Swinburne’s schools liaison activities.

Compensatory and Community Access Unit

Co-ordinator
J. Learmont, BA(Hons), MEd(Mon), MACE, 819 8816

Individual assistance in English and mathematics is available to students, as all courses at Swinburne. The need may arise from difficulties being experienced with the English subjects of their courses, or alternatively, be as a result of a weakness in written expression or mathematics which is having an effect on student progress in a variety of subjects of the particular course.

Tutoring can be short-term to overcome a specific difficulty or it may be arranged on a weekly basis over a longer period of time.

The service is provided from the houses located at 42 and 44 William Street. Understanding staff are available to help you overcome your own special study problem.

Students are strongly advised to take immediate action once they recognise that weakness in English and/ or mathematics is affecting the progress in their courses.

The Unit is 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 are available at a range of different skill levels, from 1.1 to small group tuition.
Swinburne Applied Research and Development Division (SARDD)
Liaison Officer
Dr P. Alabaster, 819 8001
Swinburne was the first college of advanced education in Victoria to appoint an Industrial Liaison Officer to establish closer working relationships with industry, enabling applied research and investigation to be carried out for a wide cross-section of industry and commerce. Industrial liaison centres operate at many tertiary colleges overseas.
SARDD covers consultation, technical information services, testing and research in addition to design and development of special projects.
SARDD is a member of ATICCA (Australian Tertiary Institutions Consulting Companies Association) and IACHEI (International Association of Consultants in Higher Education Institutions).

Swinburne Centre for Computer Aided Design and Manufacture (SCCADAM)
Manager
Vacant, 819 8364
The Centre was established in 1984 to promote the use of computer-aided design and manufacturing techniques in the Australian manufacturing industry. In addition, the Centre will provide an integrated and coordinated facility enabling a high standard of teaching for both advanced education and TAFE at Swinburne.
In particular, the Centre will:
— provide short courses and seminars, at all levels, for industrial personnel; carry out research, development and demonstrations in conjunction with both software houses and industrial users;
— provide a general information and consulting service to industry;
— provide a contact point for visiting members of staff from academic institutions, industrial organisations and government authorities;
— provide access to sophisticated equipment and resources for investigating problems; and
— promote the teaching of computer-aided design and manufacturing at all levels.

Swinburne Student Bookshop Co-operative Limited
Manager
R. Wilkens, 819 8225
General enquiries: 819 4406
This bookshop has been established for the benefit of all students and staff at Swinburne. The aim of the bookshop is to maintain a high standard of service together with a low as practicable price structure on all books, stationery, calculators and other items sold.
The shop is situated in the Student Union Building, John Street. Entrances are from John Street and from the Cafeteria Quadrangle.

General information
The Co-operative is set up to service the needs of both students and staff of Swinburne.
The Co-operative carries in stock all those items required to help students complete their studies successfully.

Membership
For the Co-operative to function successfully it must have members. The members in turn support the Co-operative by buying shares which supply the Co-operative with its working capital.
To become a member of the Co-operative complete a share application form and pay $5.00 for 5 x $1 CD shares. After the application has been accepted a membership card will be issued. This card should be carried at all times.

Membership entitlements
Only members of the Co-operative will receive a discount of 10% on all items purchased from the Co-operative. (The exception being those marked specifically NET PRICE on those items coded ‘E’. e.g. $1.65). Non-members will be required to pay FULL price.
Members are entitled to attend and vote at all Annual General Meetings. They are also eligible to be elected a member of the Board of the Co-operative as per the Society’s rules.

Co-operative hours
Hours of opening
Normal hours of opening for the bookshop during semesters are:
Monday to Thursday inclusive 8.30am to 7.30pm
Friday 8.30am to 5.00pm
Public holidays
Closed
During vacations
Mid-semester 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 mid-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.

Student parking
Enquiries
Student Union, 8198520
Limited car parking facilities are provided for all part-time and full-time students. No charge is made, but a 1986 car park sticker must be clearly displayed on the car. The stickers are available at the Student Union.
Evening students may not leave cars in Swinburne car parks while they attend work during the day.
Convenient parking is provided for motorcycles and bicycles, the latter under cover.
On-campus parking areas are indicated on the map inside the back cover of this Handbook. Additional parking areas which can be used are located immediately behind Hawthorn Football Ground, accessible from Linda Crescent. Only 5 minutes walk from Swinburne, that area provides ample parking.

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. It is unlike a trade union in its functions of setting awards or wages. Fundamentally, the Student Union ensures that the time a student spends at college is rewarding, safe and enjoyable.

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 whose membership consists of persons who enrol or re-enrol for courses of study offered by Swinburne in a particular year. 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 education 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 Executive of the Union consists of: President, Vice-President, Finance Director, Education Director, Media Director, and Activities Director. 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, social activities, and media. These areas are governed by Management Committees, whose responsibility is 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 Union.

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 last 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.

**Clubs and societies**

Many clubs and societies are in operation providing a wide range of activities for students. Clubs active in 1985 included:

- Telegraphics — Film and Television and Graphics Arts Society
- Japanese Association of Students
- Greek Society
- Fijian Society
- Cinema Association
- Organisation of Laboratory Technician Students (SOLTS)
- Jewish Students Society (SWINJSS)
- Association of Swinburne Psychology Students (ASPS)
- Mechanical Engineering Students Society
- Photographic Society
- Environmental Health Society
- Association of Civil Engineering Students
- Biophysics Society
- Malaysian Students Association (MSA)
- Overseas Students Association of Swinburne (OSAS)
- Christian Fellowship
- Liberal Club
- Italian Club
- Australian Labor Party Club (ALP)
- Swinburne's Tertiary Orientation Program Students (STOPs)
- Swinburne League of Business Students (SLOBs)
- Swinburne Theatrical Group
- Folk and Blues Clubs
- Association of Role Players (SARPS)
- Chemical and Biology Students (SCABS)
- Electrical and Electronic Engineering Students (SEEES)
- Vietnamese Society
- Explorers Club
- Society of Country Students (SOCS)
- Computer Club
- Third World Forum
- TAFE Club
- Media Club

Any group of students may establish a club or society to further their group's aims and may apply for affiliation with and financial support from the Union.

**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 insurance.

This insurance scheme covers all accidents, 24 hours a day, worldwide. For further details, please contact the Student Union Office.

**Orientation**

Orientation is held in the first week when classes begin. All students will find it helpful to enter into the activities associated with orientation as it will familiarise them with the various aspects of Swinburne that they may otherwise take months to find out about. Information about orientation is available on your first day at Swinburne.

**Radio station**

3SW provides music and information every day for students in the Cafeteria and Lounge. Students are involved in the running, organisation, announcing and content of the programs. Anyone interested in becoming involved at any of these levels should contact the Radio Co-ordinator at 3SW in the Union Building. Production facilities for special programs and recording are available.

This is a valuable media which is part of the student radio network consisting of many Melbourne campuses and all students have access to it.

**Union Videola**

This is a sound and video lounge which provides video movies and music listening areas. The closed circuit radio 3SW is run by students from this area and also has a sound recording studio.

In this music lounge ID cards may be exchanged for head phones to listen to any radio station (including 3SW) or taped music of your choice.

**Union Meeting/Activities rooms**

The Student Union has three rooms available to clubs and societies affiliated to the Union for conducting meetings or activities. All bookings are to be made at the Union Office, 4th level, Union Building. Two weeks notice must be given to use these rooms.

**Student Union Lounge**

This is a quiet reading and indoor games area located on the third level, immediately below the Union Offices, in the Union Building.

**Euth 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.

**Student publications**

A twice-weekly publication, *Sibull*, is provided by the Student Union. This publication provides information about on-campus student activities and other matters of particular interest to students as well as free advertising. It also provides a forum for students to present and argue their views on all matters.

SCAm is the monthly newspaper of Swinburne students. SCAM is published every month, and carries articles on various subjects which probably won't be found in the monopoly media. It is a vocal newspaper analysing social issues pertaining to students and the wider community of which they are part. Both these are produced at the Media Office of the Student Union. Contributions by students to SCAM are always welcome, in graphics, cartoons or articles. The Union diary and year planner are available at the beginning of each year from the Union Office.

**Club printing**

Clubs and societies can have their publicity materials printed free at the Media Office. Other publicity materials can be produced at minimal costs.
Union cafe
The Cafe provides a range of articles such as confectionery, hot and cold drinks, hot take-away food, sandwiches and cakes. The Cafe is conveniently located on the ground level of the Union Building and prices are kept low to meet student budgets.

Contact Resource Centre
This Centre is housed in the building on the corner of John Street and Burwood Road.

The Contact Resource Centre has club rooms and meeting rooms for clubs to hold meetings. There is a lounge which is particularly geared for mature-age and part-time students, although other students have complete access to this room. The lounge is open from 9.00am to 10.00pm.

The Centre is also a resource library. This is a starting point for students doing research on their class projects. The Centre carries material on current affairs, consumer news, legal aid and health and welfare leaflets. At the Centre, students can participate in the awareness-raising process by conducting special projects. The Centre caters for clubs and societies that need research and organisational assistance with projects and functions.

Equipment loan service
The Contact Centre operates as the distribution point for equipment for gardening, automotive repairs, carpentry, camping, leisure activity and education. Students and staff are entitled to hire the equipment at a small charge. Call in at Contact or the Union Office for details.

Activities Department
Activities are organised on campus by the Student Union and various clubs and societies to make your stay at Swinburne more enjoyable. These range from bands, barbecues, balls, workshops, cinema, theatre, comedy acts and discos.

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. In this Centre, parlour 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.

Legal Adviser
The Student Union provides a free legal service for full- and part-time students. Every week the solicitor is available for your legal queries. Appointments must be made at the Union Office. The solicitor is available every Tuesday, during the academic year, between 2.00pm and 6.00pm.

Education Research Officer
The role of the Education Research Officer is to act as advocate for students in areas of dispute. These areas are dealing with problems between students and lecturers/students in a confidential manner; advising and assisting students in appeals concerning assessment, course content and course workload; to assist students through the use of course evaluation surveys, and to do educational research for the Union.

The Student Union's Education Research Officer is located in the Union Office to meet the needs of Institute and TAFE students.

Union Office
This is situated on the fourth level of the Union Building. Students use it as a drop-in and discussion centre. Various services are provided at the general office including car parking permits, insurance claims, advice and information.

Union Information Desk
This is a referral and resource point, located on the 3rd level of the Union Building, for students seeking information on services offered within Swinburne and in the neighbourhood. Messages for colleagues can be left here to be collected. Students will find a ‘Friendly Contact Worker’, who is a senior student who will provide assistance on how to survive at college.

Sports Association
Executive Officer
P. Kiteley, BED(Rusd), 819 8019

At Swinburne there is a very active Sports Association which promotes and encourages a wide variety of sporting and recreational activities. The Association is run by students and has over twenty affiliated clubs. The Association's office is housed in the Sports Centre which has four squash courts, a very well-equipped weight-training gymnasium and table tennis/recreation room. The aim of the Association is to promote greater awareness of the benefits of physical fitness and involve student and staff in a variety of recreational and sporting activities. A diverse program is available including recreational sports such as SCUBA diving, sailing, skiing, and snow skiing and traditional sports of football, soccer, netball and basketball, etc. A fitness appraisal scheme is available along with afull-time Physical Recreation Officer to advise all members of the Association.

The Association competes in an intercollegiate competition between other Victorian colleges and on a national level it is affiliated with the Australian Colleges of Advanced Education Sports Association, which conducts interstate sporting carnivals. The sports involved in these competitions are athletics, badminton, basketball, football, hockey, netball, soccer, squash, swimming, table-tennis, tennis and volleyball.

Field and game
Club rifles, shotguns, and reloading equipment available. Regular skeet/trap shoots and hunting trips are held.

Gymnasium
Well-equipped weight-training gymnasium catering for both men and women; regular instruction available.

Martial arts
Both Tae Kwon Do and Tan Soo Do classes are conducted on campus.

Motorcycle
Regular club rides, competitions, plus use of club room and tools.

Sailboarding
Sailboarding offers classes, trips and hiring of boards for participants at all levels of this exciting sport.

SCUBA diving
Classes for beginners and regular dives. The club has its own inflatable dinghy with an outboard. Equipment available for hire.

Snow skiing
Mid-week and weekend trips to Hotham; Buller and Falls Creek during the mid-year break. Weekend trips during second semester.

Surfing
Regular trips both local and interstate, equipment available.

Water skiing
Offers instruction to beginners as well as experienced skiers. All equipment provided, including boat. Numerous trips during holidays and weekends.

Additional facilities
In addition to the above, the Sports Association operates a sports store which sells a complete range of sporting goods at discount prices.

The Sports Association Office and sports store are located in the Sports Centre off John Street, north of the railway line.
swinburne institute of technology

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Swinburne Institute of Technology
Director
R.S. Davie, BE(Adel), CEng, FIProdE, FIEAust, MACE

Faculty of Applied Science
Dean
A.P. Gardner, MSc(Mon), DipEd(SITAnd), MRSC, ARACI
Head, Department of Applied Chemistry
I.K. Jones, PhD, BAppSc, DipEd(Melb)
Head, Department of Computer Studies
G.A.K. Hunt, BA(Melb), DipAppChem(SIT), MBCS, MACS, MACM
Head, Department of Mathematics
R. Kavanagh, MA(Oub), MSc(Gal), MASOR, MORS
Head, Department of Physics
R.B. Silberstein, PhD(Melb), BSc(Hons)(Mon), MAIP, MIBME, MACPSM

Faculty of Arts
Dean
I. McNeilage, DipArt(CIT), TTTC
Head, Department of Film and Television
B.C. Robinson, F(DipArt(RMIT), TTTC
Head, Department of Graphic Design
R.A. Francis, DipArt(SIT), TTTC

Faculty of Business
Dean
L.A. Kilmartin, BA(Qld), MA(ANU), PhD(LaT), MAPsS
Chairman, Department of Humanities
R.L. Love, BSc(Qld), CHPS(Camb), PhD(Melb)
Head, Department of Languages
B. Warren, MA, DipEd(Melb)
Head, Department of Liberal Studies
M. Harney, MA, DipEd(Melb), PhD(ANU), GradDipArt(AppfTV)(SIT)
Head, Department of Psychology
M.A. Howe, EdD(UMass), MA(Melb), FAPsS, FIPMA
Chairman, Department of Social and Political Studies
T.G. Castleman, BA(Hons)(Ind), PhD(Mon)

Faculty of Engineering
Dean
M.H. Hunter, BCom, DipEd(Melb), MAdmin(Mon), FASA
Head, Department of Accounting
N.J. Allport, BCom, MBA(Melb), BE(Melb), AASA(Sen)
Head, Department of Administration and Law
L.A.J. Zimmerman, BCom, MBA(Melb)
Head, Department of Data Processing and Quantitative Methods
R.W. Treloar, MSc(Manc), TSTC
Head, Department of Economics
D.J. Thomas, BA(NSW), MA(Syd), PhD(Mon)

Faculty of Education
Dean
L.M. Gillin, PhD(Cantab), MEd, MEngSc, BMetE(Melb), ASAE(Ball’t), FIEAust, AAIP, MA(MME), MAAIA
Head, Department of Civil Engineering
R.B. Sandie, MEngSc, BEng(Elec), FIEAust, MASCE, MACE
Head, Department of Electrical and Electronic Engineering
N. Zorbas, MEngSc, MEd(Melb), BE(Hons)(WAust), CEng, MIEE, 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(Son), BSc(Tech)(NSW), MIEAust

Membership of Academic Board
As at 30 June 1985
Ex officio
Chairman
Dr W.R. Longworth (Principal Director)
Director, Swinburne Institute of Technology
Mr R.S. Davie
Director, Educational Services
Mr L.M. Jenkins
Director, Administration
Mr F.G. Bannon
Deans
Mr A.P. Gardner
Dr L.M. Gillin
Mr M.H. Hunter
Dr L.A. Kilmartin
Mr I. McNeilage

Heads of teaching departments
Mr N.J. Allport — Accounting
Dr T. Castleman — Social and Political Studies
Mr R.A. Francis — Graphic Design
Dr M. Harney — Liberal Studies
Dr M.A. Howe — Psychology
Mr G.A.K. Hunt — Computer Studies
Dr I.K. Jones — Applied Chemistry
Mr R.P. Kavanagh — Mathematics
Dr R.L. Love — Humanities
Dr J.H. Perry — Mechanical Engineering
Mr B.C. Robinson — Film and Television
Mr J.K. Russell — Manufacturing Engineering
Mr R.B. Sandie — Civil Engineering
Dr D.J. Thomas — Economics
Mr R.W. Treloar — Data Processing and Quantitative Methods
Mr R. Warren — Languages
Mr L.A.J. Zimmerman — Administration and Law
Mr N. Zorbas — Electrical and Electronic Engineering

Registrar
Mr G.L. Williamson (Secretary)
Swinburne Librarian
Mr W. Linklater

Co-ordinator, Student Health and Welfare Unit
Miss M. Algar
Head, Education Unit
Mr B. Hawkins
Representative, Swinburne College of TAFE
Mr B.C. MacDonald
Representatives, Board of Studies SCT (2)
Mr R.M. Carmichael
Mr R.W. Conn
Representatives, Swinburne Council
Ms J. Eastwood
Mr B.J. O’Neill
President, Student Union
Mr K.J. Smith

Elected members
Faculty of Applied Science (6)
Mr P.A. Evans
Mr J. Feeondo
Dr R.E. Hendtlass
Mr R.L. Laslett
Mr G. Lonergan
Vacant (1)
Faculty of Arts (2)
Mr W. Thomas
Vacant (1)
Faculty of Arts (4)
Mr G.H. Gotts
Mr J. Morison
Mr J. O’Hara
Mr R.R. Smith
Faculty of Business (6)
Mr B. Clark
Mr G. Leonard
Mr W.C. Nash
Mr J. Wielgosz
Vacant (2)
Faculty of Engineering (7)
Mr V. Bulach
Mr I.B. Chapman
Mr P. Higgins
Mr J.F. Lambert
Mr K.J. McManus
Mr G.L. Price
Mr G.A. Ross

General representatives
Mr R.H. Cook
Mr R.F. Cother
Ms S. Edmonds
Mr H. Zimmerman

Members in a personal capacity
Mr P.D. Stewart
Mr R.S. Walker

Student members
Mr M.A. Fairley
Ms S. McIntosh
Mr A. Panow
Vacant (3)

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)
- Applied Chemistry
- Biophysics
- Computer Science
- Environmental Health
- Instrumental Science
- Mathematics

Bachelor of Arts (BA)
- Economics
- Graphic Design
- Historical and Philosophical Studies
- Italian
- Japanese
- Literature
- Media Studies
- Political Studies
- Psychology
- Sociology

The course in graphic design is offered by the Faculty of Art; the remainder by the Faculty of Arts.

Bachelor of Business (BBus)
- Accounting
- Data Processing
- Economics/Marketing

Bachelor of Engineering (BEng)
- Civil Engineering
- Electrical Engineering
- Manufacturing Engineering
- Mechanical Engineering

Diplomas
Courses leading to diploma qualifications of Swinburne Institute of Technology are available in the following areas:

Diploma of Applied Science (DipAppSc)
- Environmental Health

Diploma of Art (DipArt)
- Film and Television
- Graphic Design

Diploma of Building Surveying

Postgraduate

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

- Accounting
- Air-conditioning
- Applied Colloid Science
- Applied Film and Television
- Applied Social Psychology
- Biochemical Engineering
- Biomedical Instrumentation
- Business Administration
- Chemical Engineering
- Civil Engineering Construction
- Computer Simulation
- Corporate Finance
- Digital Electronics
- Entrepreneurial Studies
- Industrial Management
- Industrial Microbiology
- Japanese
- Maintenance Engineering
- Management Systems
- Manufacturing Technology
- Organisation Behaviour
- Scientific Instrumentation
- Telecommunication Systems Management
- Urban Sociology

Not all these courses will be offered for new students in 1986.

Degree of Master

Programs by coursework:
- Master of Applied Science in Applied Colloid Science
- Master of Engineering in Computer Integrated Manufacturing

Programs by research and thesis leading to the degree of Master can be undertaken in those areas shown under Bachelor degrees above.
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 Institute of Secondary Education (VISE), or completed a course deemed equivalent by VISE;
   1.2 Satisfied the requirements of an approved 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 Victorian 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

First year

Applications for entry to full-time study at the first year level, except for the special provisions noted below, must be made through the Victorian Universities Admissions Committee (VUAC), 40 Park Street, South Melbourne, 3205.

Applications must be made on the appropriate VUAC form:

Form N
For students studying at HSC or TOP level at present, copies of the form are made available through the schools and colleges concerned. Students should consult the VUAC publication, Guide for Prospective 1986 Students.

Form E
For all other applicants. Copies of the form, and the Guide for Prospective 1986 Students in which it is enclosed, are obtainable from VUAC.

Special provisions

Swinburne College of TAFE students

Tertiary Orientation Program
Tertiary Orientation Program students should consult the Head of the Division of General Studies, Swinburne College of TAFE, with regard to application procedure.

Special entry

Applications for all courses must be made to the Registrar on a Swinburne application form.

Full-time

Second year and higher

Applications should be made directly to Swinburne and not through VUAC. Forms can be obtained from the Admissions Officer, 819 8386.

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

- Applied Science: 10 January 1986
- Art — Film and Television: 25 October 1985
- Applied Science — Graphic Design: 15 November 1985
- Arts: 17 January 1986
- Business: 17 January 1986
- Engineering: 17 January 1986

Part-time

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

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

Closing dates for part-time places are:

- Applied Science: 10 January 1986
- Arts: 17 January 1986
- Business: 17 January 1986
- Engineering: 17 January 1986

Deferred entry

Students who are offered a place in first year for 1986 may apply for a deferment until 1987. Applications must be addressed to the Registrar, and must be made at the time an offer is received.

Deferment of up to one year will be virtually automatic for those students who apply as soon as they receive an offer. Students who have been granted deferment will be informed in writing by the faculty concerned.

Deferments will be valid for one year only, for entry to the particular course for which the original offer was made.

If a student who has been granted a deferment applies to another faculty or to another college or university, the offer of a reserved place will lapse.

Overseas students

Approval to study in Australia must first be granted by the Australian Government. Prospective students must, in the first instance, contact the Australian High Commission or the Embassy nearest their home in April/June of the year before they wish to commence their studies.

Applications to enter first year at Swinburne Institute of Technology (or any other college of advanced education, institute or university in Victoria) should be made before 4 October 1985, to the Victorian Universities Admissions Committee (VUAC).

Applications to enter later years of tertiary courses should be made direct to the Registrar.

Governments of some countries have special requirements for their nationals who wish to study in Australia; information should be obtained from the Australian High Commission or the public service in that country.

Private overseas students have to pay an overseas students charge. This charge will be levied by the Commonwealth Department of Education and not by Swinburne.
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.

Application procedure

All applications for enrolment in postgraduate diploma courses must be made directly to the Registrar. Application forms are available at the Registrar's Office.

Late applications will be considered if places are available.

All applications for enrolment in a course leading to the degree of Master should be addressed to the Registrar. Application forms are available at the Registrar's Office.

A copy of the Statute for the degree of Master (by research) is obtainable from the Admissions Officer, 819 8386.

Application forms for admission to postgraduate courses should be received by:

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>10 January 1986</td>
</tr>
<tr>
<td>Art</td>
<td>11 October 1985</td>
</tr>
<tr>
<td>Arts*</td>
<td></td>
</tr>
<tr>
<td>Japanese</td>
<td>22 November 1985</td>
</tr>
<tr>
<td>Urban Sociology</td>
<td>22 November 1985</td>
</tr>
<tr>
<td>Business</td>
<td>17 January 1986</td>
</tr>
<tr>
<td>Engineering</td>
<td>17 January 1986</td>
</tr>
</tbody>
</table>

*Late applications will be considered if places are available.

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, on advice supplied by the faculty board, that the proposed program is a suitable study in the discipline or area concerned and that adequate facilities and supervision are available.

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 industrial, commercial, governmental, educational or research organisations approved by the Committee, or

5.3 a combination of 5.1 and 5.2.

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

On the recommendation of the faculty board 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.
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 responsibility for the administrative conduct of programs.

If for any reason a supervisor is unable effectively to supervise the candidate for a period exceeding three months, the 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 approved 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 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.

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 his candidature began.
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;
   (b) a consolidated statement of all subjects so far attempted is printed on the student's re-enrolment form. (The student keeps a receipted copy of this form when re-enrolling);
   (c) on completion of their courses, students receive a copy of their complete course record.

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 $30.00
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 30 June (for students completing their courses at the end of first semester) or 31 October (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. Abandonment 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 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 all documents required by the Registrar at the Cashier's Office or the Student Administration Office as appropriate to the procedure being followed.

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1986 had not been determined. As a guide those for 1985 were:

<table>
<thead>
<tr>
<th>Category</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time students</td>
<td>$88.00</td>
</tr>
<tr>
<td>Part-time students</td>
<td>$30.50</td>
</tr>
</tbody>
</table>

For all Institute purposes 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 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 2nd and 3rd years
- Applied Science diploma (Environmental Health) 2nd and 3rd years
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.

Refund of fees

Later VUAC offer

A student who has enrolled as a result of an offer made through the Victorian Universities Admissions Committee (VUAC) and who receives a later offer from VUAC 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 1986.

No later VUAC offer

A student who withdraws and does not receive a higher preference offer from VUAC 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 1986. No refunds of fees will be made where a student withdraws from study after 31 March 1986. No refunds of fees will be made under any of the provisions set out above unless the student returns to the Student Administration Office with the notice of withdrawal, his or her 1986 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
   Friday 11 April 1986, or
(b) for subjects concluding at the end of the second semester
   Friday 5 September 1986.

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 1986.

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 11 April 1986 (for subjects concluding at the end of the first semester) or 5 September 1986 (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 $5.00 per subject will be charged.

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

Leave of absence

Students who have enrolled in a course and who wish to apply for a period of leave of absence may do so in writing addressed to the 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 1986 general service fee only if their application is received prior to 31 March 1986.

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 identity card issued to them.

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

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

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

No refund of the general service fee will be made unless the identity card is returned to Student Administration with the notice of withdrawal from a course.
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 assessment 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 Swinburne award and includes a 'faculty' where that responsibility is taken at the faculty level.

Head of awarding department
The person responsible for the academic leadership and administration of the awarding department. In the case of an award being within the responsibility of a faculty rather than department it means the dean of that faculty.

Awarding faculty board
The faculty board responsible for making recommendations to the Swinburne Council for the grant of a particular award.

Chief Examiner
The Chief Examiner is the Principal Director of Swinburne. Responsibilities of Chief Examiner are, for the time being, delegated to the Director, Swinburne Institute of Technology.

Course
A set of subjects the completion of which leads to the student being eligible for the grant of an award by the Swinburne Council.

Convener
The person designated to convene meetings of the particular subject panel established under section 4 of these regulations.

Examination
The formal testing of all students enrolled in a subject during a period specified by the Academic Board for the purpose of examination subject to the control of the Registrar through his designated officer and for which a result must be produced, published and recorded on the student's record.

Examinations notice board
A public notice board on the Swinburne campus designated by the Registrar for the purpose.

Examinations Officer
The member of staff of the Registrar's Department who is responsible for the day-to-day administration of examinations.

Faculty board
Includes any properly constituted sub-committee of a faculty board authorised by the board to approve results for a subject.

Head of teaching department
The person who holds the position of head or chairman of the department at Swinburne Institute or Technology which is responsible for the teaching of a particular subject.

Student
A person who is enrolled in any subject or subjects offered by Swinburne Institute of Technology whether formally enrolled for a course or not.

Subject
A course of study by whatever name known (including 'unit') within a particular discipline which is recorded in a register of subjects maintained by the Registrar. A subject has a unique code number and a title and is recorded in the register as being taught for a number of weeks (duration).

Subject panel
A panel of members of the academic staff of Swinburne Institute of Technology established under section 4 of these regulations.

Student Administration Office
Room AD109 in the Administration Building.

Teaching department
The department of Swinburne Institute of Technology which has the responsibility for the teaching of a particular subject.

Teaching faculty board
The board of the faculty within which the department responsible for the teaching of a particular subject is located.

2. The objectives of assessment

These regulations shall, in any question of interpretation, be read subject to the following objectives:

2.1 For the purpose of these regulations the main functions of assessment are:

2.1.1 The facilitation of learning which includes such matters as:
(a) helping to establish learning situations appropriate to the needs, abilities and potentialities of the individual student;
(b) enabling the diagnosis and alleviation of specific learning difficulties;
(c) motivating and directing learning experiences;
(d) developing and maintaining skills and abilities.

One of the most effective ways of facilitating learning is to provide the student with 'feedback', that is, to let the student know, as soon as possible after they are discerned, any specific errors, misunderstandings and shortcomings, and then to assist in overcoming them.

2.1.2 The certification of the level of achievement which students have reached in subjects and/or courses at Swinburne Institute of Technology:

2.1.3 Assistance with the evaluation and review of course content and objectives;
2.1.4 Assistance with the evaluation and review of methods of instruction.

2.2 Although these regulations concentrate chiefly on the certification aspect of assessment, the Academic Board considers that the other functions of assessment stated in 2.1 above are of even greater importance in the educative process.

3. Forms of assessment

3.1 Without limiting the generality hereof, assessment of students enrolled in a subject may be undertaken in any of the following, or any combination of the following:
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 department, where such faculty or department is not also the teaching faculty or department, 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; and

4.5.1.2 determine the assessment categories to be used for the subject for the 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 regulation 4.6.6 prior to the issue of the particular assignment or test.

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

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

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

4.6.2 Ensure that the Registrar is notified, at least one week prior to the commencement of the examination period for the semester, of any subject for which pass/not pass results only are required.

4.6.3 Ensure that assessment for the subject is conducted.

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

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

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

4.6.7 Be present, or his 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; and

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. Candidature

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

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

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

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

5.4 It is the responsibility of a student to become familiar with the subject attendance requirements and methods of assessment adopted for each subject undertaken; enquiries should be directed to the convener of the appropriate subject panel.
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 Time-tables
6.2.1 Approximately half-way through each semester a provisional time-table 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 time-table 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 time-tables may be given over the telephone by a member of the Swinburne staff.

6.3 Conduct of examinations
Unless otherwise stated on the time-table, morning examinations will commence at 9.05 am and afternoon examinations at 1.35 pm.

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 he decides that there has he shall convene a meeting of the following persons:
(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 Principal 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)
- Not pass (NWD) — Not pass because of late withdrawal
- Not pass — no attempt (NA)

If this provision is used a statement shall be included in the published results to the effect that only one category of satisfactory achievement was awarded in the subject concerned.

7.1.2 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:
- Special exam (SPX)
- Deferred (DEF)
- Continuing (CON)
- Exempt (EXM)

7.1.4 In courses in engineering and applied science for which block passing schemes have been approved by the Academic Board the following results only may be used for `Faculty Result' subjects:
- Pass (P) where all individual subjects have been passed;
- Faculty pass (FP) where one or more subjects have been failed but the student is permitted to proceed to the next stage without being required to repeat the subject or subjects failed;
- Not pass (N) where one or more subjects have been failed and the student is required to repeat all or some of the subjects undertaken in the stage for which the faculty result of 'Not pass' was obtained.
7.2 Processing results

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

- The results recommended for each student enrolled for the subject;
- Such statistics as are required by the head of department and faculty board;
- 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 deferment. The student and the subject convener shall be advised of the date and conditions set for the finalisation of the result.

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

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

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

7.4 Continuing notation

The notation 'continuing' may be used:

(a) in those subjects in which enrolment will normally extend for more than one year;
(b) in cases where a result is determined on submission of a report or thesis; and
(c) in cases where a student may be required to extend his or her enrolment in a subject for longer than the normal duration of the subject without a failing result being recorded for the earlier period of enrolment.

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

7.5 Publication and withholding certification

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

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

7.5.3 Official publication of results shall be by their display in a pre-designated place on the Institute campus on the date or dates announced by the Registrar for the release of that particular semester's or year's results.

7.5.4 No results will be given over the telephone.

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

7.5.6 No certification of current or past academic results will be produced or made available to any student or previously enrolled student or to any other person on behalf of a student or previously enrolled student of the 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 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.

7.6 Reports

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 Principal Director.

(Access to examination scripts and marks for each question will be available on request and without fee. Enquiries regarding marks or access to scripts should be made directly to the appropriate department or faculty office.

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
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 qualification and has presented for and failed that subject in the final semester, or where a student has failed, in his penultimate semester, a subject which was not again available in the final semester. Application under this clause must be lodged at the Student Administration Office not later than midday on the seventh working day after the day of the publication of the results of the subject in the final semester.

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

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

8.4 Any extension of that period must have the prior approval of the dean of the awarding faculty who shall fix an alternative date 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.

8.5 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. 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.
Swinburne Centre for Applied Neurosciences
Co-ordinator
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) 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.

Computer Animation Development Centre
Manager
Mr J.E. Bird, Department of Film and Television, 819 8554
The Centre was established in 1984, following the receipt of funding from the Department of Employment and Industrial Affairs.
The Centre runs short courses in computer animation techniques, specialist industry seminars and acts as an information resource centre and referral agency.
Equipment installed in the Centre is also used within the graduate diploma course in film and television for students specialising in computer animation.

Centre for Computer Integrated Manufacturing
Chairman
Mr J.K. Russell, Department of Manufacturing Engineering, 819 8169
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 for three years during which the Centre plans to build upon the resources already existing in the Department of Manufacturing Engineering and the Swinburne Centre for Computer Aided Design and Manufacturing, by establishing a computer integrated manufacturing facility for high level teaching of CIM to students from all tertiary institutions, and demonstration and training in the technology for industry.
The Centre has a group of staff available to assist in industrial development projects in CIM.

Centre for Industrial Democracy
Chairman
Mr G.C.J. Morieson, Department of Liberal Studies, 819 8067
The Centre was established in 1982 to provide an advisory and referral service to commercial enterprises, government departments and any other groups who intend to incorporate aspects of industrial democracy.
It has become a clearing house for industrial democracy issues; papers are published occasionally; seminars and workshops are organised and it is now part of a statewide and interstate network of agencies which provide these facilities.

Science Education Centre
Chairman
Mr A.P. Gardner, Dean, Faculty of Applied Science, 819 8503
The Applied Science Faculty at Swinburne has a Centre which carries out the following functions:
 ● offers technical information to secondary school staff;
 ● provides the opportunity for secondary students to carry out experimental work at Swinburne, using equipment not readily available in schools;
 ● operates the Travelling Science and Technology Show which is designed to stimulate interest in science;
 ● provides a meeting place for the exchange of ideas between teachers.

Centre for Urban Studies
Chairman
Mr J.R. Palmer, Department of Civil Engineering, 819 8127
Enquiries: 819 8825, 819 8837
The Centre for Urban Studies was established at Swinburne to co-ordinate and promote the involvement of teaching staff in the urban studies field. The Management Committee is composed of staff from Sociology, Psychology, Mathematics, Economics and Civil Engineering, which reflects the multidisciplined approach at the Centre. A program of short courses, seminars and research forms the basis of activities. Short courses have included Landscape Design and Local Area Traffic Management, and seminars, where outside specialists have been invited as guest speakers, included The Informal Economy and the City and The Local State.
More recently, the Centre has become increasingly involved in urban research. The Inner East Housing Study, funded by the Department of Community Welfare Services, examined the changing demographic trends of the Inner East Region and the implications for housing provision and local housing policy. A study on Youth Housing Policy for the Australian Housing Research Council focused on the need, demand and supply of housing for youth in Melbourne, Sydney and a country region. Other continuing research includes a study of the development, location and impact of public housing in Melbourne; preparation of a series of publications for the Institute of Family Studies on contemporary housing and its impact on the Australian family; preparation of housing studies for local municipalities, and establishment of a housing data base for the Melbourne metropolitan area.

Centre for Women's Studies
Chairman
Dr T. Castleman, Department of Social and Political Studies, 819 8064
Enquiries: 819 8825, 819 8837
The Centre for Women's Studies was established in 1984 and is comprised 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.
### Undergraduate courses

**Degree of Bachelor of Applied Science**
- Double major in Applied Chemistry
- Biochemistry/Chemistry
- Biophysics/Instrumental Science
- Computer Science/Instrumental Science
- Mathematics/Computer Science
- Environmental Health

**Diploma of Applied Science**
- Environmental Health

### Postgraduate courses

- Graduate Diploma in Applied Colloid Science
- Graduate Diploma in Biomedical Instrumentation
- Graduate Diploma in Computer Simulation
- Graduate Diploma in Industrial Microbiology
- Graduate Diploma in Scientific Instrumentation

### Subject details

### Swinburne Institute information

### General information
**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 applied chemistry, biochemistry, biophysics, chemistry, computer science, instrumental science 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.

**Diploma of Applied Science (Environmental Health)**

This diploma course is now being phased out. No new students will be accepted, but students already enrolled may continue their 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 Simulation
- Industrial Microbiology
- Scientific Instrumentation

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

**Higher degrees**

Individual applications for candidature for the degree of Master of Applied Science may be made through the Faculty of Applied Science. Intending candidates should, in the first instance, contact the Faculty Secretary, Mr J.S. Ure, 819 8481.

**Professional recognition**

The courses leading to degrees in applied science with a double major in applied chemistry or biochemistry are recognised by the Royal Australian Chemical Institute. The courses leading to a degree and including the major in computer science 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 biophysics and instrumental science 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 course leading to a degree or diploma in applied science (environmental health) are recognised by the Health Commission of Victoria and the Australian Institute of Health Surveyors.

**Career potential**

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

**Applied Chemistry**

Applied chemistry is the study of chemical principles and their application to industrial problems. Graduates may find industrial careers in production, quality control, sales, technical services, research and development, and administration.

Employment opportunities exist in the manufacture of industrial and agricultural chemicals, fertilisers, explosives, detergents, plastics, dyes, textiles, paints and cosmetics and in the processing of food, coal, oil, gas and minerals.

Opportunities also exist in government and semi-government organisations such as those concerned with health, environment or power generation.

**Biochemistry**

Biochemistry is the study of the chemistry of living matter and is based on the principles of organic and physical chemistry. Biochemists study the chemical composition of living organisms and the physical and chemical processes of the living cell. Applied biochemistry encompasses the chemistry of fermentation, nutrition, agriculture and medicine.

Graduates are employed in industry particularly in the manufacture of drugs and pharmaceuticals; in the food industry, in milk, butter and cheese production, and in the stock-feed industry. They are also employed in medical clinics, hospitals, pharmaceutical and veterinary laboratories, and in medical research.

**Biophysics**

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

Graduates may take up careers as hospital scientists or technologists. 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.

In industry there are opportunities for graduates to take up development and consultancy positions in organisations serving the medical and biological professions.

**Computer Science**

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 computer science/instrumental science 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 chemistry/computer science graduate could be interested in the simulation of complex chemical processes while a mathematic/computer science graduate would be well trained to tackle the solution of the usually intractable problems found in applied mathematics.

**Instrumental Science**

The study of instrumental science provides students with a sound basis of measurement and instrumentation principles and their use in the development of instrumentation for the various areas of applied science and technology.

The range of instrumentation studied includes nuclear, chemical, ultrasonic and optical instrumentation. Emphasis is on analogue and digital electronic techniques, signal processing and on the interfacing of instruments with microprocessors and computers.

This field of study is unique to Swinburne and is an appropriate major to be combined with biophysics, chemistry, computer science or mathematics.
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 have become a significant reality 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 major 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
These courses are 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, poison 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.

Entrance requirements
Degree courses in Applied Science
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.

Applied Chemistry, Biochemistry
Year 12
Prerequisite Group 1 subjects: Chemistry and a branch of Mathematics. Recommended additional Group 1 subjects: English and Physics.

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 Tertiary Orientation Program are guaranteed entry to the first year.

Biophysics/Instrumental Science
Year 12
Prerequisite Group 1 subjects: Physics and a branch of Mathematics. Recommended additional Group 1 subjects: English and Chemistry. Students who have taken accredited Group 2 subjects are considered for admission.

Tertiary Orientation Program
Students who have satisfactorily completed subjects equivalent to the above are considered.

Computer Science/Instrumental Science
Year 12
Prerequisite Group 1 subjects: A branch of Mathematics, Physics and English. Students who have taken accredited Group 2 subjects are considered for admission.

Tertiary Orientation Program
Students who have satisfactorily completed subjects equivalent to the above are considered.

Mathematics/Computer Science
Year 12
Prerequisite Group 1 subject: A branch of Mathematics. Recommended Group 1 subjects: English, Pure Mathematics, Applied Mathematics.

Tertiary Orientation Program
Students who have satisfactorily completed subjects equivalent to the above are considered.

For specific entrance requirements for courses other than those above, please contact the Faculty Secretary on 819 8481.

Environmental Health
Standard entry to the first year of the course requires satisfactory completion of a Year 12 course of study in a Victorian secondary school, or its equivalent.

Year 12
Recommended Group 1 subjects: English, General Mathematics, Chemistry and Physics.

Tertiary Orientation Program
Students who have satisfactorily completed subjects equivalent to the above are considered.

Swinburne College of TAFE students who 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.

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 Biomedical Instrumentation
Entry is open to applicants with a first tertiary qualification in a scientific or medical discipline. 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 Computer Simulation
Entry is open to applicants with a first tertiary qualification in engineering, science or economics. 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 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.

Graduate Diploma in Scientific Instrumentation
Entry is open to applicants with a first tertiary qualification in a scientific or engineering discipline. 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.
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 normally not available to students who have within the last three years failed any of the formal entry assessments. Selection is based on the applicant's technical background, employment and, in borderline cases, an interview.

Applicants for special entry should include in their application, details of their previous academic background (or reasons for the lack of it), and a statement of their work experience. Offers of places are made on the merits of particular cases. 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. Each application is considered individually by the heads of the appropriate departments in consultation with the Applied Science Faculty Board.

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 and undertake a project.

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 Universities Admissions Committee
- 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 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 enrolling 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 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 (these are not included in this Handbook), 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
Student performance is assessed by various methods, e.g. formal examinations, tests held during the semester, project work, assignments and laboratory reports. A statement of the workload requirements and the assessment program for each course 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. General

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, part-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.

1.2 Release of results

Although subject results are released on completion of the subject, eligible first year full-time students and all part-time students are assessed on one semester'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.

2. The Faculty Result

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 3).
- N Not Pass: where the student is not permitted to proceed to next stage of the course (see clauses 4 & 5).

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.

3. The Faculty Pass formula

3.1 Assessment categories

Teaching departments must use the following assessment categories in submitting provisional results to the Board:

HD, D, C, P1, P2, N1, N2, N3
3.2 Automatic Faculty Pass

Except as stated in clause 3.4 an automatic Faculty Pass is awarded to students whose minimum subject assessment is N1 and whose aggregate rating satisfies the following formula:

\[ \sum (n_i z_i - 5n_i) \geq 0 \]

Where \( n_i \) is the number of hours per week in the \( i^{th} \) subject and \( z_i \) is the rating in the \( i^{th} \) subject.

The rating/category relationship is as follows:

<table>
<thead>
<tr>
<th>Assessment category</th>
<th>Range of marks</th>
<th>Rating</th>
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</thead>
<tbody>
<tr>
<td>HD</td>
<td>&gt;85</td>
<td>9</td>
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<tr>
<td>D</td>
<td>75–84</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>65–74</td>
<td>7</td>
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<tr>
<td>P1</td>
<td>60–64</td>
<td>6</td>
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<tr>
<td>P2</td>
<td>50–59</td>
<td>5</td>
</tr>
<tr>
<td>N1</td>
<td>40–49</td>
<td>4</td>
</tr>
<tr>
<td>N2</td>
<td>30–39</td>
<td>3</td>
</tr>
<tr>
<td>N3</td>
<td>&lt;30</td>
<td>0</td>
</tr>
</tbody>
</table>

In applying the formula pass/fail subjects are categorised as P1/N2.

3.3 Deliberative Faculty Pass

The Board may award a Faculty Pass to a student whose subject assessments contain one or more N3 results.

A Faculty Pass shall not be awarded to a student whose subject assessments contain one or more N3 results.

3.4 Exceptions

Notwithstanding clause 3.2, a student whose academic record in the course contains a previous Faculty Pass shall not be awarded an automatic Faculty Pass.

4. Consequences of 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 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).

5. Exclusion

In any semester if a student fails all subjects or fails any subject(s) twice, the student will be invited by letter to show cause within ten working days why he or she should not be excluded from further study in that course. If the student makes no submission by the due date or if the submission is not accepted by the Courses Committee, the student will be excluded and no application for readmission will be considered until a period of two years has elapsed.

6. 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 degree and diploma 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. They are given an appreciation of the structure and purpose of the various organisations concerned, enabling them to make more realistic decisions regarding the area of the profession in which they wish to become involved. 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 manpower and by establishing a 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 University of Surrey, England and with the University of Victoria, Canada, have been of particular value to chemistry students.

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 price of $50, 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 Graduate Diploma in Applied Colloid Science.

T.G.O. Jordan Memorial Prize

Reference books to the value of $50 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 diploma 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 applied chemistry
2. biochemistry combined with chemistry
3. biophysics combined with instrumental science
4. computer science combined with instrumental science
5. mathematics combined with computer science
6. environmental health

The structures of courses 1 to 6 are described below. Combination of the single major chemistry with instrumental science, computer science or mathematics are also offered on an individual basis, subject in each case to the approval of the Faculty Board.

All the degree courses may be studied on a part-time basis. The availability of evening classes depends on student demand. Details of part-time programs are available from the Faculty Secretary and from the heads of the teaching departments.

New course structures which are four-year programs in the cooperative format are introduced in 1986 (1986 syllabus). Courses prior to 1986 continue to study the 1983 syllabus. Both successful full-time students who commenced one of the courses prior to 1986 continue to study the 1983 syllabus. Both course structures are set out below.

1. Double major in Applied Chemistry

This course provides a thorough basis for a career as a professional, industrial or research chemist. It features a range of industrial topics which support and extend the main themes of chemistry while amplifying the students' industrial experience.

Full-time course

(1986 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 3</th>
<th>Semester 4</th>
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<tbody>
<tr>
<td>SC154 Chemistry</td>
<td>SC254 Chemistry</td>
<td>AT299 Complementary Studies</td>
<td>SA209 Work Experience</td>
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<td>SC108 Biology</td>
<td>SK104 Computer Science</td>
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<td>SM108 Mathematical Methods</td>
<td>SP206 Instrumental Science</td>
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<td>SP106 Physics</td>
<td>SM124 Mathematics Methods</td>
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also provides a sound background in the theory and application of analytical and preparative techniques in the practice of biochemistry, reinforced by the inclusion of industrial experience.

**Full-time course**

*(1986 syllabus)*

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*(1983 syllabus)*

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3. Biophysics/Instrumental Science

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 instrumental and life sciences. The biophysics has a clinical orientation and consists of two parallel streams, human physiology and biophysical instrumentation.

A thorough appreciation of instrumental philosophies and techniques is offered in instrumental science. Areas of study in this major include nuclear, ultrasonic, ultra-violet, X-ray and optical instrumentation together with a strong emphasis on information processing, and digital and analogue electronics.

**Full-time course**

*(1986 syllabus)*

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SP401 Signals & Systems 4 60
SP402 Physics 4 2 30
SP410 Instrumental Science 4A 4 60
SP430 Instrumental Science 4B 4 60
SP424 Biophysics 4A 4 60
SP425 Biophysics 4B 4 60

Semester 5
SA209 Work Experience

Semester 6
SA309 Work Experience

Semester 7
SP501 Experimental Techniques 2 30
AT596 Brain & Behaviour 2 30
SP509 Physics 5 4 60
SP510 Instrumental Science 5A 4 60
SP530 Instrumental Science 5B 4 60
SP524 Biophysics 5A 4 60
SP525 Biophysics 5B 4 60

Semester 8
SC601 Chemical Instrumentation 2 30
SP601 Special Project 2 30
SP610 Instrumental Science 6A 4 60
SP630 Instrumental Science 6B 4 60
SP624 Biophysics 6A 4 60
SP625 Biophysics 6B 4 60
SP626 Applied Neurosciences 2 30
SP609 Physics 6 2 30
(1983 syllabus)

Semester 1
SC114 Chemistry 5 90
SC184 Biology 4 72
SK114 Computer Science 5 90
SM114 Mathematical Methods 5 90
SP114 Physics 5 90

Semester 2
SC110 Chemistry 4 72
SM118 Mathematics 4 72
SP113 Instrumental Science 4 72
SP115 Physics 8 144
SP123 Biophysics 4 72

Semester 3
AT291 Complementary Studies 2 36
SA201 Industrial Case Studies 2 36
SM203 Mathematics 4 72
SP217 Analogue Instrumentation 4 72
SP218 Digital Instrumentation 4 72
SP227 Bioelectric Phenomena 4 72
SP228 Contractile Dynamic Systems 4 72

Semester 4
SP407 Signals and Systems 4 72
SP408 Physics 4 72
SP417 Scientific Instrumentation 4 72
SP418 Digital Systems 4 72
SP427 Respiratory and Renal Adaptations 4 72
SP428 Physiological Control Systems 4 72

Semester 5
SA301 Clinical Experience

Semester 6
SA302 Clinical Experience

Semester 7
AT493 Brain and Behaviour 4 72
SA409 Special Project 4 72
SP417 Analogue System 4 72
SP418 Advanced Instrumentation 4 72
SP427 Sensory Systems 4 72
SP428 Higher Cortical Functions 4 72

Part-time course
The course is 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.
Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.

4. Computer Science/Instrumental Science
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.
The ‘software’ emphasis in computer science 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
(1986 syllabus)

Semester 1
SK104 Computer Science 5 75
SM108 Mathematical Methods 5 75
SP106 Physics 5 75
BS510 Business Studies 5 75
1 subject chosen from:
SC154 Chemistry 5 75
SC108 Biology 4 60

Semester 2
SK204 Computer Science 2 8 120
SM219 Mathematical Methods 4 60
SP310 Instrumental Science 2 4 60
SP209 Physics 2 6 90
AT299 Complementary Studies 2 30

Semester 3
SP309 Physics 3 4 60
SM319 Mathematical Methods 4 60
SP310 Instrumental Science 3A 4 60
SP520 Instrumental Science 3B 4 60
SK304 Computer Science 3 8 120

Semester 4
SP401 Signals & Systems 4 60
SM419 Mathematical Methods 4 45
SP410 Instrumental Science 4A 4 60
SP420 Instrumental Science 4B 4 60
SK404 Computer Science 4 9 135

Semester 5
SA209 Work Experience

Semester 6
SA309 Work Experience

Semester 7
SM319 Mathematical Methods 3 45
SP509 Physics 5 4 60
SP510 Instrumental Science 5A 4 60
SP520 Instrumental Science 5B 4 60
SK504 Computer Science 5 9 135

Semester 8
SA409 Special Project 4 60
SP610 Instrumental Science 6A 4 60
SP620 Instrumental Science 6B 4 60
SK604 Computer Science 6 8 120
XXXXX Complementary Studies subjects 4 60

(1983 syllabus)

Semester 1
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SM114 Mathematical Methods 5 90
SP114 Physics 5 90
BS197 Business Studies 5 90
1 subject chosen from:
SC114 Chemistry 5 90
SC184 Biology 4 72

Semester 2
SK115 Computer Science 8 144
SM118 Mathematical Methods 4 72
SP113 Instrumental Science 4 72
SP115 Physics 8 144
### Mathematics/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 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

### (1986 syllabus)

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### Part-time course

The course is 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.

Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.

### 5. Mathematics/Computer Science

#### (1983 syllabus)

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### Part-time course

The course is 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.

Part-time students must also acquire two semesters of relevant work experience. The Institute does not arrange for work experience for part-time students.
6. 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.

**Diploma of Applied Science (Environmental Health)**

(1976 syllabus)

No new students will be accepted into this course. The course takes the form of a three-and-a-half year program of cooperative education in which students attend the Institute for a total of five semesters and gain practical work experience for two semesters. For students in the full-time course, Swinburne arranges the work experience.

### Full-time course

(1986 syllabus)

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### Semesters 17 to 21

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<td>SC411</td>
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</table>
Postgraduate courses

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

Semester 1
- Science 556 Properties of Colloids 8 120
- Science 557 Colloid Experimental Techniques 8 120

Semester 2
- Science 558 Elective Subject 8 120
- Science 559 Elective subject 8 120
- The elective subjects are chosen from the following list:
  - Science 562 Emulsion Technology
  - Science 563 Polymer Flocculation
  - Science 564 Mineral Processing Chemistry
  - Science 565 Detergency
  - Science 566 Surface Coatings
  - Science 567 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.

Graduate Diploma in Biomedical Instrumentation (1983 syllabus)

This course 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.

The program is structured as a set of independent units, each of sixty hours duration and taught one evening per week for one semester. To qualify, a candidate must complete eight units, at least six of which must be at the advanced level, including the project unit and at least two biomedical units. (Students may take more than two introductory units, but credit will only be given for a maximum of two.)

Enrolment in introductory units must be approved by the Head of Physics.

Biomedical units

<table>
<thead>
<tr>
<th>Introductory</th>
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<th>Hours semester</th>
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Advanced

<table>
<thead>
<tr>
<th>SP531</th>
<th>Biophysical Systems and Techniques 4 60</th>
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<tbody>
<tr>
<td>SP532</td>
<td>Clinical Monitoring Techniques 4 60</td>
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<tr>
<td>SP533</td>
<td>Aspects of Metabolic Measurements 4 60</td>
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<tr>
<td>SP534</td>
<td>Neurophysiological Techniques 4 60</td>
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Instrumentation units

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<th>Hours semester</th>
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<td>Science 555</td>
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</tbody>
</table>

Graduate Diploma in Computer Simulation (1982 syllabus)

This course is intended for graduates in engineering, applied science, environmental and biological sciences or economics, who have a professional interest in mathematical modelling and simulation. It is also suitable for recent graduates in appropriate disciplines who wish to gain theoretical knowledge and practical experience of these techniques.

The program is designed as a two-year part-time course, although a longer period may be taken if desired, the timetable specifying eight hours per week. It is expected that applicants will have a knowledge of mathematics and statistics at a tertiary level. In some cases a preliminary unit in mathematical methods may be prescribed.

<table>
<thead>
<tr>
<th>Introductory</th>
<th>Hours week</th>
<th>Hours semester</th>
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<tr>
<td>Science 564</td>
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</table>

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 microorganisms.

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.

<table>
<thead>
<tr>
<th>Introductory</th>
<th>Hours week</th>
<th>Hours semester</th>
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<tbody>
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</table>
The program is designed as a two-year part-time course, the time-table specifying seven hours (two evenings) per week for four fifteen-week semesters.

<table>
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Graduate Diploma in Scientific Instrumentation
(1984 syllabus)

This course is primarily intended for graduates in a scientific or engineering discipline who require a detailed knowledge of the design, construction and operation of modern laboratory instrumentation.

The program is designed as a two-year part-time course, the normal attendance requirements being eight hours per week (two evenings) for four fifteen-week semesters.

The course is based on a unit structure, each of which comprises sixty hours of class time (one evening per week for one semester). Not all units will be available in any one year, student demand being taken into account in determining which units are offered in any semester.

Moreover, there is some choice between introductory units and advanced units, the former being designed to prepare the student for the latter when this is necessary. The project unit is compulsory.

To qualify for the award, a student must complete eight units, at least six of which must be at the advanced level, including the project unit. (Students may take more than two introductory units, but credit will only be given for a maximum of two.)

Enrolment in introductory units must be approved by the Head of Physics.

Introductory units

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<tr>
<td>SP552</td>
<td>Introduction to Scientific Instrumentation</td>
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<tr>
<td>SP553</td>
<td>Introduction to Instrumentation Electronics</td>
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<tr>
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Advanced units

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<td>Optical Instrumentation</td>
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<td>SP544</td>
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Project unit

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</table>

Applied Science subject details

Reading guides

In most subjects, conveners will issue detailed reading guides during the first week of classes. However, reading material is listed under individual subject entries according to the following definitions:

- Preliminary reading
  - Introductory material which students are expected to read before classes commence.

Textbooks

Material essential to the subject

References

Material 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.

Subject details

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or Faculty</th>
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<td>SC</td>
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<td>Electrical and Electronic Engineering</td>
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<td>Mechanical Engineering</td>
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<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
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SA102 Physical Science

This subject will be offered from 1986

Lectures: 30 hours in one semester
Discussion groups and practical work: 45 hours in one semester
Assessment:
- Assignment 40%
- Examination 30%
- Practical work and assignments 30%

Methodology (30 hours)

Lectures will include a discussion on the nature of scientific method
The role of analogies and models. Acquisition of theories. Heuristic and inductive uses of theories. Criticism and acceptance of theories.

Physics (45 hours)

Lecture demonstrations and discussion groups will cover the following topics:
- Natural philosophy
- Dimensional analysis
- Celestial mechanics
- Jet/rocket propulsion
- Wave model for electromagnetic radiation
- Energy transformation
- Relativity

References


Other references to be advised by the lecturer at the beginning of the course
SA114 Physical Science
Five hours per week for one semester
A first-semester subject for degree students majoring in mathematics and computer science. This subject is designed for students with little scientific background and introduces them to scientific thought, principles, and methodology with applications of these methods in various disciplines of the physical sciences.

SA115 Physical Science
Four hours per week for one semester
Pre requisite: SA114 Physical Science
A second-semester subject for degree students majoring in mathematics and computer science. This subject continues and develops the studies undertaken in SA114.

SA201 Industrial Case Studies
Two hours per week for one semester
A second-year subject in the degree course in applied science except for students majoring in chemistry combined with computer science or instrumental science.
The subject is an introduction to real industrial problem-solving by means of case studies and relevant literature (e.g. professional journals). Students generally study problems related to their areas of major study, and the implementation of the solutions of the problems in a real situation. Strong emphasis is on communication skills and to this purpose students are expected to present both written and verbal reports on their work.

SA202 Physical Science
This subject will be offered from 1986
Lectures: 30 hours in one semester
Practical work: 30 hours in one semester
Assessment: 25% Assignment
25% Examination
15% Practical work
The lectures will be divided into two groups:
Methodology (15 hours)
Social Implication of Science Lectures will introduce students to the role of science in modern society and will include discussion on areas such as genetic engineering, science and public policy, science and the environments, etc.
Chemistry (15 hours)
The following topics will be discussed and illustrated where appropriate by practical experiments:
Chemical reactions and equations
Slo t chemistry
Analysis
Periodic table
Oxidation and reduction
Organic chemistry
Radioactivity
Large molecules
References
To be advised by the lecturer at the beginning of the course.

SA302 Clinical Experience
A six-month period of hospital or industrial work experience occurring as part of the third year of the course leading to the degree of Bachelor of Applied Science for those students majoring in biophysics. Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA303 Applied Research/Project Management
Three hours per week for one semester
Pre requisite: satisfactory completion of the first five semesters of the course
A major subject in the degree course in applied science.
The subject comprises individually and/or group assigned work and involves oral and/or written presentation in the areas of applied research, project management and work study.
References
References will be supplied in class.

SA304 Applied Research/Project Management
Two hours per week for one semester
A major subject in the part-time degree course in applied science.
The subject contains topics from the areas of project management and work study.
References
References will be supplied in class.

SA305 Industrial Project
Two hours per week for one semester
A major subject in the part-time degree course in applied science.
The subject involves students either individually and/or as a group in case studies.

SA306 Chemical Data Processing
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: 100% Examinations and assignments
Chemometrics: The use of computers and mathematics to process chemical data. Topics will change according to current practice and will include some of the following: computer systems, interfacing computers with chemical instruments, data acquisition methods, data transformation methods (e.g. Savitsky-Golay, Fourier transformation), data interpretation (e.g. comparison with reference spectra), some commercial systems (e.g. Infrared Data Station), laboratory automation, and data banks.
SA602 Chemical Physics
This subject will be offered from 1989
Lectures: 15 hours in one semester
Assessment: Tests 100%
Radiation chemistry: Properties, Definitions, Units, Measurement of radiation dose. Influence of radiation on aqueous systems and gases
Experimental methods. Applications. Production and irradiation of polymers

SA609 Special Project
This subject will be offered from 1989
Industrial project: 60 hours in one semester
Assessment: Project—Oral 40%  Written 60%
The project will be industrially oriented and will be so chosen to complement the industrial experience. The choice of study is dependent on the type and variety of work experience. For example in the computer science/mathematics course if the student's work experience was in computing, then the project must be in mathematics. If the work experience covered both majors then the project will also cover both areas.

SC100 Environmental Health
This subject will be offered from 1986
Lectures: 30 hours
Assessment: Examination/assignment
Historical background: A history of public health in Victoria and the impact of environmental health on the prevention of spread of infectious diseases.
Administration: The structure and role of Federal, State and Local Government agencies involved in environmental health, pollution control and occupational health and safety.
A brief overview of appropriate legislation that the health surveyor is required to administer

References
Administration of Environmental Health Programmes. WHO. 1974
Environment Protection Authority Annual Reports
Food Act and Regulations
Health Act and Regulations
Health Commission of Victoria Annual Reports
Lee, K. and Mills. A Policy Making & Planning in the Health Sector
McKown, T. The Role of Medicine. 1980
Pritam, L. and Ram. T. Environmental Health & Hygiene. 1981
Pundom, W. Environmental Health. 1980
Winslow, C.E.A. The Conquest of Epidemic Disease. 1982

SC108 Biology
This subject will be offered from 1986
Lectures: 30 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Theory 80% Practical work 20%
The course introduces the cell as the basic biological unit, considers tissues as aggregates of cells with specialised function and then proceeds to treat the following systems in some detail:
Cardiovascular system: Properties of blood; anatomy and physiology of the heart. Mechanical and electrical events of the cardiac cycle; cardiac output. Regulation of heart rate and blood pressure, haemostasis.
Respiratory system: Anatomy of the respiratory system; gas exchange and transport; control of respiration.
Renal system and water balance; structure of the kidney and urinary system. Basic renal processes. Regulation of extracellular volume and composition.
Digestive system: The arrangement and functions of the digestive system.
Muscular system: Types of muscle and their roles. Mechanism of contraction. Conduction in the heart.
Immune system: Reticuloendothelial system. Inflammation, phagocytosis; lymphocytes, cell-mediated immunity; antibody-mediated immunity.
Nervous system: Nerves and excitation; transmission, the synapse; simple reflex arc.
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 and first-aid procedures 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 certain first-aid techniques. Extensive use is made of anatomical charts, biological models and such specialized equipment as spirometers and electrocardiographs. Microcomputers are used by students in exercises that simulate certain body functions.

Reference

SC114 Chemistry
Five hours per week for one semester which includes thirty hours of laboratory work
A first-semester subject in the degree courses in applied science
This subject centres on the theme of chemical reactions, their properties and applications. It includes quantitative aspects of chemical reactions, properties of chemical reactions (equilibria, conductance and kinetics), energy from chemical reactions (thermochemistry and redox), applications of organic reactions, and the chemistry of metals (their extraction and uses, bonding and environmental aspects).
SC115 Chemistry
Six hours of theory and six hours of laboratory work per week
Prerequisite, SC114 Chemistry
A second-semester subject for degree students majoring in chemistry. The subject covers the following areas:
- Bonding: electronic structure of atoms and molecules
- Physical chemistry: thermodynamics — work, heat, first and second laws, thermochemistry, free energy
- Organic chemistry: preparations, reactions and uses of the major classes of compounds with an emphasis on mechanisms and understanding the underlying concepts.
- Analytical chemistry: precipitation equilibria, gravimetry, complex ion equilibria. Effect of complex formation on solubility of sparingly soluble salts. Application of complex formation in analysis
- Inorganic chemistry: ionic bonding, intermolecular bonding, chemistry of the elements.

SC116 Chemistry
Four hours per week including laboratory work
A second-semester subject for degree students majoring in biophysics.
This subject consists of the following areas:
- Thermochemistry of chemical reactions and biological oxidation, bonding theory, organic chemistry and the chemistry of proteins and enzymes.

SC150 Chemistry
This subject will be offered from 1986
Lectures: 45 hours
Laboratory: 30 hours
Assessment: Theory 80%, Laboratory 20%

Basic chemical concepts: revision of names, symbols and electronic configurations; chemical reactions
- Structure of elements & compounds: properties and nature of metallic, ionic and covalent bonding.
- Chemical periodicity.
- Weak bonding interactions: dipole, hydrogen and VDW.
- Stoichiometry: mass-mass; mass-volume; volume-volume and redox calculations.
- The properties of gases and the gas laws: Boyle's and Charles' law; ideal gas equation; kinetic molecular theory of gases; calculations; partial pressures; pressure and solubility; law of diffusion
- Applied stoichiometry: use of common unit in commerce and industry; calculations involving chimney stack emissions, furnace air suoldes, neutralisation reactions, load/factors for pesticides, etc.

References
To be advised by the lecturer at the beginning of the course.

SC154 Chemistry
This subject will be offered from 1986
Lectures: 45 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Theory 80%, Laboratory 20%

Quantitative aspects of chemical reactions
- Chemistry of metals: General properties, distribution economic importance and environmental problems. Metallic bonding. Heavy metals in food and water. Analysis of metals. Corrosion and protection of metals.

References
To be advised by the lecturer at the beginning of the course.

SC181 Biology
Four hours of theory and two hours of practical work per week for one semester
A first-year subject in the diploma course in applied science (environmental health).
A course which covers the basic elements of human biology listed below:
- Cell structure and function. Types of tissues.
- Basic principles of the functioning of the skeletal, muscular, nervous, respiratory, digestive, urinary, and reproductive systems. Senses.

References
For details concerning prescribed text book, references, etc. consult the lecturer.

SC182 Biology
Four hours of theory and two hours of practical work per week for one semester
A first-year subject in the diploma course in applied science (environmental health).
A course which covers the fundamental elements of environmental biology listed below:
- Genetics: structure and importance of gene and chromosome
- Mutation: variation applied to human populations
- Evolution: taxonomic principles applied to plant, animal and protista kingdoms. Causes and processes of evolution. Main evolutionary lines using selected examples of importance to public health.
- Ecology: eco-systems; energy chains, food chains and food webs and their relationship to mammalian activity and function. Pollution and its effect on eco-systems.

References
Consult the lecturer in charge.

SC184 Biology
Four hours of theory and practical work per week for one semester
A first-year subject in the degree courses in applied science. The subject provides an introduction to human biology by studying cell biology and the biology of the various organ systems of the body.

SC185 Biology
Six hours of theory and practical work per week for one semester
A compulsory second-semester subject for degree students majoring in applied chemistry or biochemistry.
The course covers genetics, nutrition and microbiology.

SC191 Chemistry
Two hours of theory and three hours of practical work per week for one semester
A first-year subject in the diploma course in applied science (environmental health).
- Atomic and molecular structure. The names, symbols, electronic configurations of the more commonly encountered elements with their environmental significance being stressed. Ionic and covalent bonding.
- Structure of solids.
- Chemical periodicity: Atomic structure related to chemical properties.
- Periodicity of chemical properties related to periodicity of atomic structure. Trends within the periodic table.
- Stoichiometry: chemical formulae, equations, Mass-mass, mass volume, redox calculations. Simple analytical procedures and the interpretation of experimental data.
- Kinetics, reaction rates, equilibria

Preliminary reading
Dickson, T.R. Introduction to Chemistry. 2nd edn. N.Y., Wiley, 1975

SC192 Chemistry
Two hours of theory and three hours of practical work per week for one semester
A first-year subject in the diploma course in applied science (environmental health).
- Equilibrium: corrosion and pH
- Equilibria, gaseous acid-base, redox, complex ion and solubility. Corrosion,

SC208 Biology
This subject will be offered from 1986
Lectures: 45 hours in one semester
Laboratory: 45 hours in one semester
Assessment: Theory 70%
Laboratory 30%

Genetics: The unit develops the material along historical lines, beginning with Mendel’s work on simple inheritance including pedigrees. This leads on to chromosome structure in eucaryotes and procaroyotes. Other areas to be covered are mitosis and meiosis, bacterial and fungal genetics, human genetics, biochemical genetics and population genetics.

Molecular basis of nutrition: This unit builds on the physiology covered in first year, and takes a biochemical view of nutrition.

Topics to be covered: Molecules of food, digestion, absorption and fate of carbohydrates, proteins and fat, requirements for vitamins and trace elements, diet, nutrition and cancer, diet processing, toxicity in foods and alcohol metabolism.

Microbiology: This unit again takes an historical perspective then moves on to examine the diversity of microorganisms, (both procaroyotic and eucaryotic) as well as viruses. The unit concludes with an overview of the scope of microbiology, considering microorganisms as agents of disease, health and industrial uses of microbiology.

Reference
Curtis, H Biology. 4th edn, Worth, 1983

SC209 Biology
This subject will be offered from 1986
Lectures: 45 hours
Laboratory: 45 hours
Assessment: Theory 80%
Laboratory 20%

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 caloric content of foods. It also views nutritional states and indicates some problems associated with food toxicity.

Basic microbiology: an introduction to the microbial world to include the history, culture and scope of microbiology. Elements of the microbial world to range from viruses, rickettsia, chlamydia, bacteria, algae and blue-green algae, fungi and protozoa. Methods of handling microorganisms, methods of isolation and methods of growth. Relationships between microorganisms and pathogenesis.

Introductory genetics: an introduction to the basic concepts of genetics with particular emphasis on illustrating the scientific basis of variation in species as a result of mutational changes during evolution. This unit illustrates the importance of reproductive biology and the wide variations in species characteristics which may occur by crossover and linkages. The advantages of particular niches and life cycle patterns (e.g. mosquito, protozoon or helminth) will be used as illustrations.

References
Ross, F. Introductory Microbiology, Merrill, 1983

SC217 Chemistry
Six hours of chemistry theory per week for one semester
Prerequisites. SC131/2, SC141/2, SC151/2, SC161/2

A second-year (semester 3) subject in the degree courses for chemistry students.

Thermodynamics
Thermodynamics of formation (AH°), S°, G°, free energy, enthalpy, entropy, and Ke with temperature. The emphasis lies in data handling and manipulation of chemical potential variables. Available work.

Phase equilibria.
Phase rule, phase diagrams and lever rule. One-component systems. Clausius-Clapeyron equation and vacuum distillation. Two-component systems: Liquid-vapour equilibria — miscible liquids. bp diagrams, fractional distillation, azeotropes — partial miscibility and effect of third component — steam distillation, partition between solvent extraction of and salting out of immiscible liquids. Solid-liquid equilibria — effect of second component on mp (criterion of purity), cooling curves; eutectics, partial miscibility and solid solution formation with compound formation (congruent and incongruent mp), fractional crystallisation, zone refining. Solid-vapour equilibria. Introduction to three-component systems.

Chromatography

Analytical
Sampling. Sample size reduction. Factors in selection of qualitative analytical techniques. Advantages and limitations of gravimetry, titrimetry, spectrophotometry (UV/visible and AA), selected electrochemical techniques (electro-deposition, polarography, stripping analysis and ion-sensitive electrodes), quantitative separation-based methods (GC and HPLC) and thermal quantitative methods. Treatment of analytical data: errors, statistics, etc.

Aromatic compounds
Concept of, evidence for and nomenclature. Reactions of electrophiles with, and formation and reactions of sulphonic acids, sulphurhodanes, amines, aromatic halides and phenoils.

Spectroscopy
Definitions and principles. Basic instrumentation and variables that affect the spectrum. Theory, experimental practice and analysis of infra-red spectra, atomic spectra, and UV/visible spectra.

Descriptive chemistry
Thermodynamics of selected inorganic compounds. The chemistry of halides, oxides and hydrates, transition elements and their compounds, and lanthanides and their compounds.

SC219 Practical Chemistry
Four hours of practical chemistry per week for one semester
Prerequisite, the completion of first-year chemistry or its equivalent

A second-year (semester 3) subject in the degree courses for all chemistry majors.

Analytical techniques: volumetric and gravimetric analysis, analysis using an atomic-absorption (AA) spectrometer, UV/visible spectrometer and a gas chromatograph.

Organic techniques: volumetric analysis for saponification and unsaturation, steam distillation, identification and characterisation using chemical tests, physical measurements, gas chromatograph and infra-red spectrometer (IR).

Physical experiments: thermodynamics and phase equilibria.

SC250 Chemistry
This subject will be offered from 1986
Lectures: 30 hours
Laboratory: 45 hours
Assessment: Theory 80%
Laboratory 20%

Rates of chemical reactions: factors affecting rates of reaction; mathe- matical expressions and rate laws; first order rate and radioactive decay.

Chemical equilibria: gaseous, acid-base, solubility, complex ion and redox equilibria.

Applied equilibrium concepts: the application of equilibrium concepts to the mobilization of metal ions.

Organic chemistry: classes of organic compounds and their identification, substitution, elimination and addition reactions; Important uses, polymers.

Applied organic chemistry, pesticides - structure and reactivity; basic air pollution.

References
To be advised by the lecturer at the beginning of the course

SC254 Chemistry
This subject will be offered from 1986
Lectures: 90 hours in one semester
Practical: 90 hours in one semester
Assessment: Theory 80%
Laboratory 20%

SC258  Industrial Chemistry
To be advised by the lecturer at the beginning of the course.

SC255  Chemistry
This subject will be offered from 1986
Lectures: 60 hours in one semester
Assessment: Examinations and assignments 100%
Thermochemistry of chemical reactions: Thermodynamics. Hess’s law
Surface chemistry
Emphasis on biological molecules.
Organic chemistry: Alkanes, Alkenes, Alkynes, Benzene, Alcohols, Aldehydes, Ketones, Acids, Ethers, Esters, Reactivity and uses Polymers
Acid-base equilibria

References
To be advised by the lecturer at the beginning of the course.

SC257  Chemistry
Four hours theory per week for one semester
A second-year subject for degree students majoring in applied chemistry.
Isolation and identification of organic compounds (18 hours)
This unit reviews or introduces techniques commonly used to isolate and identify organic compounds. Emphasis is on applying the techniques and developing an awareness of situations in which each could be successfully applied. Some hours are devoted to practical sessions during which a selection of the techniques considered is used.

References

Kinetics (18 hours)
Revision of definitions (rate laws, half-life, units); methods of measurement of rates; pseudo nth order reactions and determination of reaction order. Complex reactions and temperature dependence of reaction rate. Reactions of social significance, e.g. reactions in the internal combustion engine.

References
To be outlined in lectures.

Applied Inorganic Chemistry (18 hours)
Treatment of the chemistry and applications (industrial and environmental) of selected non-metals important in heavy chemical industry. The relationship between the chemistry, application and preparation of the elements and their important consumer compounds is emphasised.

References
No one text is suitable Specific articles in various texts will be referred to in lectures.

Polymer chemistry (9 hours)
Classification of polymers. Introduction to polymerisation reactions Characteristic properties of polymers and their measurement.

References
To be outlined in lectures
Carbocations (9 hours)
Formation and reactions of carbocations Industrially Important rearrangement reactions

References
To be given by lecturer

SC259  Practical Chemistry
Three hours practical chemistry per week for one semester
Prerequisites, the completion of first year chemistry or its equivalent and the completion of, or concurrence with, SC219
A second-year subject for degree students majoring in applied chemistry.
A series of experiments designed to introduce the student to basic biochemical techniques including handling of biochemicals, tissue extraction techniques, use of colorimetry and spectrophotometry for analytical purposes, e.g. determination of enzyme inhibition, effects of pH and temperature.
Catabolic fates of carbohydrates, triacylglycerols and proteins, including glycolysis, fates of pyruvate, Krebs cycle, oxidative phosphorylation, (3-oxidation, ketogenesis, amino acid degradation and urea cycle
Preparative extraction and fractionation of cellular components, chromatographic techniques. Biochemical applications of UV and IR spectroscopy.

References

SC277  Biochemistry
Three hours theory per week for one semester
A second-year subject for degree students majoring in biochemistry.
The following topics are studied:
Structures and properties of carbohydrates, lipids, proteins and nucleic acids and their constituents: structure and function of enzymes, ATP Michaelis-Menten equation, kinetics, determination of Km, Vmax, types of enzyme inhibition, effects of pH and temperature.
Catabolic fates of carbohydrates, triacylglycerols and proteins, including glycolysis, fates of pyruvate, Krebs cycle, oxidative phosphorylation, (3-oxidation, ketogenesis, amino acid degradation and urea cycle
Preparative extraction and fractionation of cellular components, chromatographic techniques. Biochemical applications of UV and IR spectroscopy.

References

SC279  Practical Biochemistry
Four hours of laboratory work per week for one semester
A second-year subject for degree students majoring in biochemistry.
A series of experiments designed to introduce the student to basic biochemical techniques including handling of biochemicals, tissue extraction techniques, use of colorimetry and spectrophotometry for biochemical analyses, qualitative and quantitative methods for the analysis of amino acids, proteins, carbohydrates, lipids and nucleic acids, enzymes; different types, properties and determination of Km, Vmax, computer simulation of enzyme kinetics, separation techniques including TLC and gel filtration, purification and characterisation of biomolecules

SC283  Microbiology
Five hours per week for one semester
A second-year subject in the diploma course in applied science (environmental health)
An introduction to the biology of viruses, bacteria, fungi and algae with emphasis on their interactions and their implications for the group to roles in diseases of man and of animals and plants of importance to man as well as to roles in technological processes
Physical and chemical anatomy: the general features of the physical structure of viruses, prokaryotic and eukaryotic cells. Consideration of structure-function relationships in bacteria, fungi and algae. Special features of chemical composition and macromolecular structure of microbial cells.

Microbial physiology: growth patterns of micro-organisms and methods for measuring growth. Physical parameters affecting growth. Basic features of nutritional categories amongst micro-organisms. Interactions between nutritional groups and the role of these interactions in environmental effects.

Sterilisation and antimicrobial substances: the basic methods used for sterilisation, the choice of method of sterilisation. The mode of action and limitations of chemical disinfectants and antimicrobial compounds used in industry and chemotherapy.

SC293 Environmental Science
Two hours of theory and two hours of practical work per week for one semester

A second-year subject in the diploma course in applied science (environmental health).

This course develops an understanding of the specific scientific principles which have been applied towards the specific tasks of the health surveyor. Considerable emphasis is placed on sanitation, particularly in relation to food and food processing, and the techniques employed in maintaining health and hygienic premises.

Food chemistry: food as the basic energy source. Types of foods and suitability for nutritional value. Role of vitamins and minerals. Metabolism of food.

Food processing: principles of food preservation. Heating, cooling, canning, drying and chemical preservation.

Toxicology: biological action and use of various chemicals introduced for control of insects and vermin of public health importance. Methods of laying baits and contrivances with these chemicals and the hazards involved in their use.

SC297 Microbiology
Two hours of theory and one hour of practical work per week for one semester

A second-year subject for degree students majoring in biochemistry. An introduction to the basic concepts and terminology of microbiology. Historical aspects commence the course, and these are followed by a description of the various classes of microbes. Lectures are given on microscopy and the other tools of microbiology. Concomitantly with studies in biochemistry, aspects of microbial nutrition, growth and biosyntheses by microbes are detailed. An introduction to the concepts of control of microbes by sterilisation, disinfection, and by treatment with antimicrobial agents. Introductory aspects of immunology and serology are also included. The microbiology theory is reinforced in appropriate practical classes in which the basic skills and techniques of microbiology are taught. Students must gain a pass in these sessions (i.e. must demonstrate adequate manipulative skill) before being considered eligible for a pass in the subject.

Textbooks
Stainer, R.Y. et al General Microbiology. 4th edn, Lond., McMillan, 1976

SC311 Seminars and visits
Thirty-six hours in one semester

A third-year subject in the diploma course in applied science (environmental health).

Time is devoted to interrelating the various disciplines studied in the course and the students' work experience. Professional health surveyors and other experts attend the seminars when a topic is in which they have a particular expertise is being discussed. This develops a relationship between the students and practising professionals and leads to a heightened appreciation of the role of a health surveyor in the community.

Each student presents a paper which is critically examined by the visiting professionals, academic staff and students.

SC317 Chemistry
Six hours theory per week for one semester

A subject in semester 6 of the applied science degree course for students majoring in chemistry

Co-ordination chemistry (18 hours)
Co-ordination compounds, uses, occurrence, structure, stability nomenclature and properties.

References
Basolo, F. and Johnson, R.C. Coordination Chemistry. N.Y., Benjamin, 1964
Graddow, D.P. An Introduction to Coordination Chemistry. 2nd edn, Oxford, Pergamon, 1968
Orgel, L.E. An Introduction to Transition Metal Chemistry: Ligand Field Theory. 2nd edn, Lond., Methuen, 1966

Electrochemistry (18 hours)
Thermodynamics of electrochemical equilibria; electrodes and phenomena occurring on them; cells and their functioning.

Consult the lecturer in charge.

Liquid surfaces (18 hours)
Surface chemistry, surface thermodynamics, surface activity and orientation at interfaces, the Gibbs equation, spreading of liquids, the nature of insoluble monolayers, contact angles and wetting, adsorption from solution, detergents, foams and emulsions.

SC319 Practical Chemistry
Three hours per week for one semester

A third-year subject for degree students majoring in chemistry.

Proteins, SC219

Organic techniques: recrystallisation, syntheses, identification and characterisation using chemical tests, physical measurements, gas chromatograph, infra-red spectrometer and polarimeter; selected techniques in electrochemistry and surface chemistry.

SC340 Applied Food Science
This subject will be offered from 1987

Lectures: 30 hours
Practical work: 30 hours
Assessment: Theory 80%, Practical work 20%

Food processing: Introduction to processes used in the food industries for the preparation and processing of foods. Problems or potential problems associated with those processes that have implications for community health.

Food chemistry: Techniques used in the determination of the amounts of carbohydrate, protein and lipid in foods. Determination of the amounts of micronutrients in foods. Methods used for determining the water content of foods. Determination of the calorie or joule contents of foods. Other manual and instrumental techniques used in food analysis (e.g. determination of sulphur (polar), 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, regulations controlling use.

Classes of chemical additives to be considered will include the following: preservatives, antioxidants, flavouring compounds, colouring compounds, sweetening agents, flavour enhancers, nutrients, emulsifiers.

Consult the lecturer at the beginning of the course.
SC349 Microbiology
This subject will be offered in 1987
Lectures: 30 hours
Laboratory: 60 hours
Assessment: Theory 80%
Laboratory 20%
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 waterworks.
Immunology: basic tenets of immunology to include the mechanism of production of antibodies in response to antigens. Vaccination and immunisation.
Reference
Ross, F. Introductory Microbiology. Merrill, 1983

SC354 Chemistry
This subject will be offered from 1987
Lectures: 105 hours in one semester
Assessment: Examinations and assignments 100%
Thermodynamics: Thermodynamics of formation (~H₄, ~S₄, ~G₄), thermodynamics of reaction (~H₄, ~S₄, ~G₄) and the variation of ~G, ~H and ~S with temperature. The emphasis lies in data handling and manipulation. Chemical potentials. Available work.
Analytical: Sampling. Sample size reduction. Factors in selection of qualitative analytical techniques. Advantages and limitations of gravimetry, titrination, spectrophotometry (UV/visible and AA), selected electrochemical techniques (electro-deposition, polarography, stripping analysis and ion-sensitive electrodes), quantitative separation-based methods (GC and HPLC) and thermal quantitative methods. Treatment of analytical data: errors, statistics, etc.
Spectroscopy: Definitions and principles. Basic instrumentation and variables that affect the spectrum. Theory, experimental practice and analysis of infrared spectra, atomic spectra and UV-visible spectra. Descriptive chemistry: Chemistry of the elements. Thermodynamics of selected inorganic compounds. The chemistry of halides, oxides and hydrides, transition elements and their compounds and lanthanides and their compounds.
SC355 Practical Chemistry
This subject will be offered from 1987
Laboratory: 60 hours in one semester
Assessment: Results and reports 100%
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.
Inorganic experiment: Chemistry of the elements.

SC356 Applied Chemistry
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: Examinations and assignments 100%
Kinetics: Revision of definitions (rate laws, half-life, units): methods of measurement of rates; pseudo first order reactions and determination of reaction order. Complex reactions and temperature dependence of reaction rate. Reactions of social significance, e.g. reactions in the internal combustion engine.

SC357 Chemistry
Three hours per week for one semester
A third-year subject for degree students majoring in applied chemistry.
Colloid chemistry
Origin of the electrical double layer, potentials at interfaces, potential determining ions and ionic adsorption, description of the electrical double layer, electrokinetic phenomena, colloid stability.
Electrochemistry
Electrodes — extension of the Butler-Valmer 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.
Organic synthesis
Planning and design of syntheses. Practical aspects and synthetic techniques. Industrial versus academic syntheses. Syntheses of commercially significant natural products.
References
Adamson, A.W. Physical Chemistry of Surfaces. 3rd edn, N.Y., Interscience, 1976
Hinzen, P.C. Principles of Colloid and Surface Chemistry. N.Y., Marcel Dekker, 1977
Shaw, D.J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970

SC358 Industrial Chemistry
Two hours per week for one semester
A third-year subject for degree students majoring in applied chemistry.
Reference

SC359 Practical Chemistry
Three hours per week for one semester
Prerequisites, SC219, SC269
A third-year subject for degree students majoring in applied chemistry.
Extension of the techniques covered in SC319.

SC364 Industrial Chemistry
This subject will be offered from 1987
Theory: 30 hours in one semester
Assessment: Theory 67%
Assignments 33%
Energy sources: Coal, oil, natural gas, nuclear.
A study of production of poly(vinyl chloride) through all stages from basic raw materials to be introduced into a unit processes for handling separations and chemical modifications and the blend of scientific and empirical methods used in industrial technology. Some emphasis is given to developing practical skills such as library research, technical calculations and flow-charting.

SC377 Biochemistry
Three hours of theory per week for one semester
A third-year subject for degree students majoring in biochemistry.
The following topics will be studied:
Structure and function of biological membranes, trans-membrane transport mechanisms.
Structure, function and synthesis of enzymes.
Biosynthesis of nucleic acids and proteins.
Integration of metabolism in mammals.
Gene repression and activation mechanisms and their role in regulation of metabolism.
Control mechanisms operating at the enzyme level.

References
To be advised by the lecturer at the beginning of the course.

SC378 Analytical Biochemistry
Two hours of theory per week for one semester
A third-year subject for degree students majoring in biochemistry. The following topics will be studied:
- Electrophoretic techniques and their applications.
- Centrifugal techniques including preparative centrifugation.
- Lyophilisation, ultrafiltration.
- Immunochemical methods: preparation and purification of antibody.
- Techniques for measuring antibiotic activity and their applications including immunodiffusion methods, IEP, IF, RIA, ELISA and related assays.
- A review of chemical methods for determining primary structure of proteins including fragmentation techniques, end-group analysis and sequencing methods.
- Techniques for determining conformation of proteins.

References
To be advised by the lecturer at the beginning of the course.

SC379 Practical Biochemistry
Five hours of practical work per week for one semester
A third-year subject for degree students majoring in biochemistry. Students perform a series of experiments that include extraction, purification and characterisation of a protein, induction of a bacterial enzyme, studies on oxidative phosphorylation in isolated mitochondria, sequence determination of a peptide, characterisation of a mixture of lipids, peptide sequencing using a computer simulation program.

SC384 Microbiology
Three hours per week for one semester
Pre-requisite: SC283
A third-year subject in the diploma course in applied science (environmental health).
A study of applied microbiology.

SC385 Epidemiology
Sixty-three hours in one semester
A third-year subject in the diploma course in applied science (environmental health).
A study of infectious diseases of man and animals, vectorial agents in disease transmission, the recognition and methods of control of epidemics, and special infections.

SC393 Practical Biochemistry
This subject will be offered from 1987
Laboratory work: 57 hours in one semester.
Computer simulation programs: 3 hours in one semester.

Assessment:
- Practical reports
- Practical test
- Assignments

A series of experiments designed to introduce the students to basic biochemical techniques including: handling of biochemicals, tissue extraction techniques; use of colorimetry and spectrophotometry for biochemical analyses; qualitative and quantitative methods for the analysis of amino acids, proteins, carbohydrates, lipids and nucleic acids. Enzymes: different types, their properties and determination of kinetic parameters of an enzyme, computer simulation of enzyme kinetics; an introduction to separation techniques including paper chromatography, thin-layer chromatography and gel filtration. Purification and characterisation of glycogen.

A strong emphasis will be placed upon matters of safety and good laboratory techniques in this subject.

SC394 Microbiology
This subject will be offered from 1987
Lectures: 30 hours in one semester.
Laboratory: 30 hours in one semester.

Assessment:
- Theory: 20%
- Laboratory: 80%


Counting techniques as a method for measuring bacterial growth. Techniques will also include simple field techniques such as membrane filtration and MPN counts.

Sterilisation methods: A wide range of physical and chemical methods, sterilisation and disinfection will be taught. The methods will range from heat and radiation methods which are suitable for laboratory use to chemicals and chlorine which are suitable for extensive waterways.

Immunology: Basic tenets of immunology to include the production of antibodies in response to antigens. Vaccination and immunisation.

SC395 Biochemistry
This subject will be offered from 1987
Lectures: 45 hours in one semester.

Assessment: Theory 100%

Chemistry of biological compounds: Structures and properties of mono-, di- and poly-saccharides, fatty acids, triacylglycerols, phospholipids, other lipids, amino acids, polypeptides, proteins, nucleic acids, nucleotides, enzymes and coenzymes.


Metabolic pathways: Glycolysis (including enzymes, coenzymes, cofactors, reversibilities, effectors), role of NAD, formation of ethanol or lactic acid. Conversion of pyruvate to acetyl CoA (including thiamine pyrophosphate, lipoic acid, coenzyme A, FAD, multiflavin complex). Krebs cycle (incl., enzymes, etc.). Components and reactions of the mitochondrial electron transport chain, ATP synthesis. Hepatic degradation of glycogen to glucose-6-phosphate. Catabolism of triglycerides and fatty acids.


SC397 Microbiology
Two hours of theory and two hours of practical work per week for one semester
A third-year subject in the biochemistry degree course.

The following topics are studied:
- Microbial physiology, microbial genetics and the manipulation of microbial genes. Taxonomy and systematics (these topics are biased towards the food and pharmaceutical industries).
The practical work comprises eighteen sessions of two hours. In these sessions students examine certain aspects of microbial physiology and introductory genetics involving bacteria, fungi, and bacteriophage. In addition, experiments connected with microbiological examination of water, food and other materials are undertaken. Many of the principles and techniques previously learned are used to familiarise students with the methods by which unknown micro-organisms are classified and identified. Some aspects of microbial ecology are considered. Some computer simulations are used also, to reinforce certain principles.

Textbooks

SC400 Environmental Health (2)
This subject will be offered from 1987
Lectures: 30 hours
Assessment: Examination/assignment/ field reports


References
Boarding House Regulations
Health Act, 1958
Health (Apartment Houses) Regulations, 1984
Health (Fire Prevention) Regulations, 1984
Health (General Sanitary) Regulations, 1984
Health (Public Building) Regulations, 1984
Health (Septic Tank) Regulations, 1977
Health (Stream Pollution) Regulations, 1984
Victoria Building Regulations

SC402 Environmental Health
Six hours per week for one semester
A final-year subject in the diploma course in applied science (environmental health).

This is a study of food surveillance, pollution investigation, waste disposal (solid and liquid) and other areas of vocational interest to health surveyors, such as:
- Report and letter writing: techniques
- Food establishments: both eating and manufacturing; investigation and surveillance techniques; practical visits and reports; legal standards. Domestic sewage disposal: all waste and smaller septic tank units; disposal fields and legal standards under the Health Act; soil absorption and transpiration theory, field visit and report.
- Pest control: recognition and control
- Fire engineering: fire control; architectural and building considerations; health surveyor's role; public buildings; report
- Food and drug standards: a study of the framework for developing food and drug standards in Australia, particularly in Victoria.

Administration
A study of state and local government authorities engaged in the administration of environmental health, including the structures and duties of councils, EPA and Health Commission.

Accommodation
Legal standards laid down for motels, hotels and apartment houses, camping areas, caravan parks and others.

Civil defence
The role of the health surveyor in times of civil disturbance or natural disaster, e.g. fire or flood.

SC410 Environmental Health Field Practice (1)
This subject will be offered from 1987
Field visits: 3 hours per week seminars: for 13 weeks Communication skills: 3 hours per week
Workshops: 2 weeks Assessment: Seminar/assignment/water examination/reports

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.

1. Visits are made to septic tank installations and small sewerage plants during construction and testing for compliance. Public buildings are visited, as are apartment houses, boarding houses, motels and food establishments.
2. Arrangements are made with the Metropolitan Fire Brigade (Fire Prevention Department) for practical demonstrations and instruction in fire engineering procedures in buildings of interest to the health surveyor.
3. Business communications (e.g. memos, letter-writing, preparing for interviews)
4. To what extent the workplace — the people, the environment, the communication needs.
5. Simulated interviews using video; feedback and evaluation.

SC411 Seminars and visits
Sixty-three hours in one semester
A final-year subject in the diploma course in applied science (environmental health).

Time is devoted to visiting relevant industrial and environmental places of interest. These visits are followed by seminars, where technical matters of vocational importance are studied.

SC413 Case Studies
This subject will be offered from 1987
Lectures: 14 hours in one semester
Case Studies: 12 hours in one semester
Tutorial: 4 hours in one semester
Assessment: Examinations and assignments: 50%
Case studies 50%


SC417 Chemistry
Five hours per week for one semester
Prerequisite, SC319

A final-year subject for degree students majoring in chemistry.


Organic chemistry (36 hours): This course includes the principles of macromolecular and heterocyclic chemistry, with particular emphasis given to compounds of medicinal, biological and industrial importance. Current developments in applied organic chemistry are featured.

References
Morison, R.T. and Boyd, R.N., Organics Chemistry. 4th edn, Boston, Allyn and Bacon, 1983
Prentice-Hall, 1979
Morison, R.T. and Boyd, R.N., Organics Chemistry. 4th edn, Boston, Allyn and Bacon, 1983
Prentice-Hall, 1979

SC419 Practical Chemistry
Fifty-four hours of practical work in one semester
Prerequisite, SC319

A final-year subject for degree students majoring in chemistry. Students are expected to plan their own experiments in order to solve assigned problems using instrumental analytical techniques.
SC440  Applied Food Science  
This subject will be offered from 1987  
Lectures:  30 hours  
Laboratory work:  30 hours  
Assessment:  Theory 85%  Laboratory work 15%  

Food hygiene  
This unit complements SC44(Microbiology). Bacteriological factors — major genera of bacteria involved in food spoilage (especially in relation to the dairy, meat, wine, canning and bottling industries) Conditions that promote or inhibit food spoilage Pathogenic bacteria commonly transmitted via foods Methods used to minimise unwanted bacterial growth.  
Mycolological factors — major genera of fungi involved in food spoilage. Microbiologically-produced carcinogens.  
Parasitic protozoa, nematodes, flatworms and roundworms that are transmitted via foods (including a study of life cycles where appropriate). Food entomology — insect pests associated with food. Life cycles, taxonomy, control.  
Importance of the cleaning and sanitising of plant and equipment. Cleaning and sanitising techniques Important types of cleaning and sanitising chemicals and applications. Evaluation of sanitation of plant and equipment (e.g. swabbing), importance of water chlorination, with particular reference to can cooling water. Methods of chlorination.  
Teasing of chlorinated water  
Food handling  
Effects of handling, processing and storage on the palatability, digestibility, stability, safety and nutritive value of foods, importance of temperature control, especially refrigeration and the ‘cold chain’, in product safety and stability.  
Use of micro-organisms  
Use of micro-organisms in the flavouring of foods.  
Use of micro-organisms in the preserving of foods (e.g. yoghurt, cheese, beer, wine).  
Use of micro-organisms in the manufacture of foods (e.g. vinegar, alcoholic beverages, cheese, sour cream, vitamins, etc.).  

References  
To be advised by the lecturer at the beginning of the course

SC449  Microbiology  
This subject will be offered from 1987  
Lectures:  15 hours  
Laboratory:  30 hours  
Assessment:  Theory 80%  Laboratory 20%  

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. caustive agents of botulism or scarlet fever)  

References  
Ross, F. Introductory Microbiology. Merrill, 1983

SC452  Epidemiology  
This subject will be offered from 1987  
Lectures:  30 hours  
Assessment:  Theory 100%  

Immunity and immunisation procedures with particular reference to public health.  
Zoonoses — Hydatids, T saginata, Rabies, Brucellosis, Leptospirosis, Anthrax, Q fever.  

References  
Alderson, M. An Introduction to Epidemiology. Control of Communicable Diseases in Man. APHA

SC454  Chemistry  
This subject will be offered from 1987  
Lectures:  105 hours in one semester  
Assessment:  Examinations and assignments 100%  

Coordination chemistry: Coordination compounds, uses, occurrence, structure, stability, nomenclature and properties.  
Electrochemistry: Thermodynamics of electrochemical equilibria; electrodes and phenomena occurring on them; cells and their functioning.  
Liquid surfaces: Surface chemistry, surface thermodynamics, surface activity and orientation at interfaces, the Gibbs equation, spreading of liquids, the nature of insoluble monolayers, contact angles and wetting, adsorption from solution, detergents, foams and emulsions.  
Aromatic compounds: Concept of, evidence for and nomenclature. Reactions of electrophiles with, and formation and reactions of sulfonamides, sulfonamides, amines, aromatic halides and phenols.  
Organic chemistry: Acidity, basicity and electronic effects. Carbanions: formation and reactions, applications to synthesis.  

SC455  Practical Chemistry  
This subject will be offered from 1987  
Lectures:  60 hours in one semester  
Assessment:  Results and reports 100%  

Organic techniques: Volumetric analysis for saponification and unsaturation equivalent, steam distillation, recrystallisation, identification and characterisation using chemical tests, physical measurements, gas chromatograph, infra-red spectrometer and polarimeter.  
Selected techniques in electrochemistry and surface chemistry.  
Inorganic experiment: Coordination chemistry.  

SC456  Applied Chemistry  
This subject will be offered from 1987  
Lectures:  30 hours in one semester  
Assessment:  Examinations and assignments 85%  Laboratory 15%  

Polymer chemistry: Classification of polymers Introduction to polymerisation reactions. Characteristic properties of polymers and their measurement. Isolation and identification of organic compounds: This unit reviews and introduces techniques commonly used to isolate and identify organic compounds. Emphasis is on applying the techniques and developing an awareness of situations in which each could be successfully applied. Some hours are devoted to practical sessions during which a selection of the techniques considered is used.  

SC457  Chemistry  
Four hours per week for one semester  
A final-year subject for degree students majoring in applied chemistry.  

Chemistry of naturally occurring substances (18 hours)  
As well as the chemistry of sugars, selected amino acids, stercic, terpene and protein chemistry will be examined.  
Photochemistry (18 hours)  
Free radicals, colour, sensitisation and quenching, optical pumping, photochemical reactions, photochemistry in industry.  
Current topics (36 hours)  
A selection of current areas of chemistry will be made. The topics selected may vary from year to year.

SC458  Industrial Chemistry  
Four hours per week for one semester  
A final-year subject for degree students majoring in applied chemistry.  
Process analysers (8 hours)  
Their use for process control.  
Reference  
Free energy relationships applied to metal extraction (10 hours)  
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.
SC479 Practical Biochemistry
Four hours per week for one semester
A final-year subject for degree students majoring in biochemistry.
A series of advanced experiments will be performed including analysis of disulfide bonds in proteins, kinetics of a bi-substrate enzyme, isolation, fragmentation and electrophoresis of bacterial DNA.
Immunochemical methods including RID, IEP, ELISA and RIA. Clinical biochemistry including use of microprocessor-controlled analysers.
In addition each student will complete a minor research project under direct supervision of a member of staff. Project results will be presented in a class seminar at the end of the semester.

SC492 Applied Chemistry Practical
This subject will be offered from 1987
Laboratory: 45 hours in one semester
Assessment: Results and reports 100%
Organic techniques (extension of SC455): Preparation, recrystallisation, extraction, separation by column chromatography, identification and characterisation using chemical tests, physical measurement, gas chromatograph, infra-red spectrometer, and NMR spectrometer.
Selected techniques in electrochemistry and surface chemistry-technology (extension of SC455).

SC493 Practical Biochemistry
This subject will be offered from 1987
Laboratory work
Computer simulation programs
Assessment: Practical reports
Practical test Assignments
Students perform a series of experiments involving studies on the enzymes and reactions of some metabolic pathways including glycolysis, Kreb's cycle and the urea cycle; extraction, purification and characterisation of a protein, analysis of a mixture of lipids, manometry and its application to studies on yeast metabolism. Preparation of intact mitochondria and subsequent studies using an oxygen-sensitive electrode, some routine clinical biochemistry tests; induction of a bacterial enzyme.
A strong emphasis will be placed upon matters of safety and good laboratory technique in this subject.

SC494 Microbiology
This subject will be offered from 1987
Lectures: 15 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Theory 80%
Laboratory 20%
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).

SC495 Biochemistry
This subject will be offered from 1987
Lectures: 60 hours in one semester
Assessment: Theory 100%
Transamination/deamination of amino acids, urea cycle. Biosynthesis of glucose, glycogen, fatty acids, triacylglycerols. Structures, functions and biosynthesis of steroids and porphyrins.
Introduction to molecular biology: biosynthesis of protein.
SC500 Environmental Health (3)
This subject will be offered from 1989
Lectures: 30 hours
Assessment: Examination/assignment

Food law: A detailed examination of the role and function of the National Health & Medical Research Council and appropriate sub-committees (e.g. Food Standards Committee, Food Legislation Committee). A study of the Victorian Food & Drug Standards, other relevant food legislation and the role of the health surveyor in food inspection, seizure and sampling procedures.

Food establishment legislation and inspection methodology. For example, food premises, eating houses, food factories and markets. Licensed premises. Reports.

Food hygiene. Vending and transport.

References
- Analysis (Health Act) Regulations 1967
- Cleanness (Foods, Drugs & Substances) Regulations 1984
- Food Act 1984
- Food and Drugs Standards Regulations 1966
- Food Vending Machines Regulations 1965
- Health Act 1958
- Health (Eating House & Food Premises) Regulations 1984
- Health (Registration) Regulations 1984
- NH and MRC Model Food Legislation

SC510 Practical Food Inspection
This subject will be offered from 1989
Practical visits 45 hours
Assessment: Seminar/examinations 100%

This subject complements Applied Food Science. Visits will be arranged each week to the food industry being studied theoretically in Applied Food Science. These include:
- Milk pasteurisation and other dairy food plants
- Abattoirs, smallgoods establishments
- Fish wholesalers
- Poultry processing works
- Frozen food manufacturers, drying and canning plants
- Fruit juice manufacturers
- Breweries

References
- Food Technology in Australia (Journal of the Council of Australian Food Technology Association)

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

Principles

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

Practical work
- The basic practical skills and theories of colloid science are taught here and are drawn from the following areas.
- Cleaning techniques and surface preparation: the measurement of surface and interfacial tension of pure liquids and liquid mixtures; adsorption at the liquid-air interface — assessment of surface concentrations; adsorption at the solid-liquid interface — determination of adsorption isotherms, measurement of surface area; the properties of insoluble monolayers; inorganic sols — preparation, critical flocculation concentration, protective action, heteroflocculation; the properties and behaviour of macromolecules in aqueous solution.

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

Principles

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

Practical work
- The surface tension of aqueous and non-aqueous solutions; the measurement of contact angle; electrophoretic techniques — streaming potential, microelectrophoresis, electro-osmosis, potentiometric and conductimetric techniques; measurement of floculation rate; determination of particle size; surface spectroscopic studies, etc.

SC532 Emulsion Technology
An elective subject in the graduate diploma course in applied colloid science — one hundred and twenty hours

Principles
- Basic properties and characteristics of emulsions. The theory of emulsion stability — surface chemical factors, applicability of the DLVO theory, the role of macromolecules as emulsion stabilisers, stabilisation by finely divided solids, the properties of thin films.

Applications
- Selected case studies are dealt with from the area of cosmetic emulsions, food emulsions, bitumen emulsions, wax emulsions, etc.

Practical work
- Basic methods of emulsion preparation; the identification of emulsion type; particle size and viscosity of emulsions; assessment of stability; the effect of emulsifier type on interfacial tension and on the electrophoretic properties of emulsions; the design and preparation of emulsions in a specific area (e.g. micromulsions, cosmetic emulsions); foaming and anti-foaming agents; minor project work.

SC533 Polymer Flocculation
An elective subject in the graduate diploma course in applied colloid science — one hundred and twenty hours

Principles

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, type and molecular weight on floc formation; the co-operative effect of metal ions and polyelectrolytes; effect of pH on flocculation; floc building; flocculation and filtrability; analytical 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 — one hundred and twenty hours

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

Applications
- Selected experiments 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, Eh 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 — one hundred and twenty hours

Principles
The origin, manufacture, nature and use of detergents. The principal types of detergents, the role of additives, etc. Detergent action — adsorption at interfaces, wettabiliy 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 IR, NMR 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 — one hundred and twenty hours

Principles

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 wettabiliy and adhesive strength; formulation of a simple paint; rheology properties; dispersion of pigments; preparation of resins; preparation and characterisation of latices; characterisation of coated surfaces (e.g. by electronmicroscope); minor project work.

SC537 Corrosion and Protection of Metals
An elective subject in the graduate diploma course in applied colloid science — one hundred and twenty hours

Principles
1. Equilibrium electrochemistry (brief treatment). Elementary aspects: \( E = \text{Nernst equation} \); equilibrium constant; effects of inert electrolytes, competing reactions and pH; Pourbaix diagrams; limitations in the use of the Nernst equation.

Applications
The complete corrosion cell. Corrosion current and factors affecting it — applications to protection and inhibition. Corrosion by pure water. 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; inorganic and organic protective coatings; disincorporation of brass; materials 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
This subject will be offered from 1989

Lectures: 30 hours
Assessment: Assignment/examination

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 smallgoods), poultry, fish
- Frozen, dried, canned and artificially preserved foods.
- Bread manufacture
- Fruit juices
- Fermented products.

References
Frazier, W.C. Food Microbiology
Longree Quantitative Food Sanitation
Martin, C.R.A. Practical Food Inspection
Stewart & Amerine Introduction to Food Science & Technology
Wooler A.H. Food Industries Manual

SC541 Microbiology
Three hours of theory per week for one semester

A subject of semester one of the graduate diploma course in industrial microbiology.

- Introduction to microbiology: eukaryotic and prokaryotic microbes; algae, protozoa, fungi, bacteria, cyanobacteria.
- The viruses.
- Microbial anatomy — introductory biochemistry of microbes.
- Methods of microbiology.

SC542 Practical Work
Four hours of practical work per week for one semester

A subject of semester one 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 semester two of the graduate diploma course in industrial microbiology.

- Microbial physiology.
- Methods of control of micro-organisms.
- Bacterial taxonomy.

SC544 Practical Work
Four hours of practical work per week for one semester

A subject of semester two of the graduate diploma course in industrial microbiology.

- The practical work complements the theory and develops the students’ skills further in the techniques used by microbiologists.

SC545 Microbiology
Three hours of theory per week for one semester

A subject of semester three of the graduate diploma course in industrial microbiology.

- Infection and infectivity.
- Basic immunology and serology; serological techniques; toxin and vaccine productions.
- Laboratory safety and design.
- Microbiology in food, pharmaceutical and other institutions; food spoilage, food poisoning, food legislation and recommendations.
- Microbial genetics, genetic engineering.

SC546 Practical Work
Four hours of practical work per week for one semester

A subject of semester three of the graduate diploma course in industrial microbiology.

- The practical work complements the theory and develops the students’ skills further in the techniques used by microbiologists.
SC547 Microbiology
Three hours of theory per week for one semester
A subject of semester four of the graduate diploma course in industrial microbiology.
Industrial fermentations; biotechnology; use of computers in biotechnology.
Enzymes and fermentation control; microbial assay and monitoring; microbial ecology; biodeterioration; waste treatment

SC548 Practical Work
Four hours of practical work per week for one semester
A subject of semester four of the graduate diploma course in industrial microbiology.
In addition to extending their technical skills, students undertake a project relevant to their employment or major area of interest.

SC550 Environmental Chemistry
This subject will be offered from 1989
Lectures: 60 hours
Laboratory: 45 hours
Assessment: Laboratory 20% Theory 80%

Chemical pollutants in the environment: sources of pollutants in air, water and soil; toxic wastes.
Methods of analysis: sampling and sample preparation; analytical methods and their sensitivity and applicability in analysis—covers volumetric, spectrophotometric, electrometric and chromatographic methods. Analyses of pollutants in air, water and soil.
Evaluation of water quality: application of water tests to assess water quality.
Chemical hazards: composition of household substances and hazards; chemicals and exposure.
Biological aspects: biological indicators of pollution; nitrogen; phosphorus; carbon and sulphur cycles; vector control; integrated pest management; use of biological, ecological and chemical methods of control.

References
Manahan, Environmental Chemistry
Selingin, Chemistry in the Market Place

SC551 Chemical Instrumentation
Four hours of theory and practical work for one semester
A subject of the graduate diploma course in biomedical instrumentation.
Topics to be covered include:
Atomic absorption, infra-red and ultra-violet spectrophotometry; electrochemistry; gas and liquid chromatography; mass spectrometry; NMR and ESR spectroscopy; X-ray techniques and associated equipment.

SC552 Epidemiology
This subject will be offered from 1989
Lectures: 30 hours
Assessment: Theory 100%
Skin contact diseases — Pediculosis and Scabies. Legionnaires disease.
Exotic diseases including Cholera, Marburg Virus Disease, Ebola Virus Disease, Lassa Fever, Malaria and Plague. Hepatitis A, B and non-AB. Virus infections. Food-borne illnesses — Shigella, Typhoid, Salmonella, Staphylococcal, Costradial and Bacillus infections.
Control of such infections
Mycobacterial infections — Tuberculosis and Leprosy. Immune-suppressing diseases to include Diphtheria, Tetanus, Measles, Rubella, Poliomyelitis, Whooping Cough. Arbovirus including dengue control and particularly with reference to Australia.
Epidemiological screening and the health impact of refugees.
Sexually transmitted diseases — Gonorrhoea. Syphilis, Chlamydial infections, Herpes T2, AIDS.
Encephalitis — mosquito control.

References
Boycott, J, Natural History of Infectious Diseases
Brody, B, Microbiology and Infectious Disease Control of Communicable Diseases in Man. APHA

SC554 Chemistry
This subject will be offered from 1989
Lectures: 75 hours in one semester
Assessment: Examinations and assignments 100%

Ion exchange and solvent extraction: Principles and applications in industrial, laboratory and biochemical situations.
Mass spectrometry.
X-ray methods: Diffraction, fluorescence and absorption.
Stereochemistry: Fundamentals.
Carbocations: Formation and reactions of carbocations, industrially important rearrangement reactions.

SC555 Chemistry Practical
This subject will be offered from 1989
Laboratory: 45 hours in one semester
Assessment: Results and reports 100%

Organic techniques: Characterisation using chemical tests, physical; measurement and infra-red spectrometer.
Inorganic experiment: ion-exchange and solvent extraction.
Instrumental techniques: Qualitative and quantitative analysis of an unknown liquid mixture using distillation, chemical tests, physical measurements, infra-red spectrometer, NMR spectrometer, gas chromatograph and mass spectrometer.

SC556 Applied Chemistry
This subject will be offered from 1989
Lectures: 60 hours in one semester
Assessment: Examinations and assessment 100%

Colloid chemistry: Origin of the electrical double layer, potentials at interfaces, potential determining ions and ionic adsorption, description of the electrical double layer, electrokinetic phenomena, colloid stability.
Electrochemistry: 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 cell.

SC564 Industrial Chemistry
This subject will be offered from 1989
Laboratory: 60 hours in one semester
Assessment: Assignments and tests 100%

Catalysis and corrosion.
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.

SC592 Applied Chemistry Practical
This subject will be offered from 1989
Laboratory: 60 hours in one semester
Assessment: Results and reports 100%

Instrumental techniques: Extension of analysis of liquid mixture using UV/visible spectrometer and double resonance, broad-line NMR experiment.
SC593 Practical Biochemistry
This subject will be offered from 1989
Laboratory work
Computer simulation programs
Assessment: Practical reports
Practical test
Assignments
A series of more advanced experiments including chain length and sequence determination of a peptide, amino acid analysis using HPLC, methods for sulphydryl group and disulphide bond analysis in proteins, conformational analysis of proteins using circular dichroism and fluorescence spectroscopy. Separation and identification of isozymes; purification, fragmentation and separation of bacterial DNA. DNA sequencing
These experiments will involve the use of more sophisticated techniques including fluorescence spectroscopy, affinity chromatography, polyacrylamide gel, SDS — gel electrophoresis, isoelectric focussing, HPLC. Use of computer for data analysis, simulation of CD spectra and DNA sequencing.

SC594 Industrial Biochemistry
This subject will be offered from 1989
Lectures: 60 hours in one semester
Assessment: Theory 100%

SC595 Biochemistry
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Theory 100%
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 regulating pathways.
The integration of metabolism in mammals — the effects of over-eating, starvation, exercise.

SC596 Analytical Biochemistry
This subject will be offered from 1989
Lectures
Computer simulation programs
Assessment: Theory 100%

SC600 Environmental Health (4)
This subject will be offered from 1989
Lectures: 30 hours
Assessment: Examination/assignment/field reports
Hairdressing establishments: structural requirements, hygiene
Skin picking establishments: hygiene and sterilisation
Requirements of tattooists and acupuncturists
Solid waste disposal: relevant regulations and nuisance problems. Offensive trades: establishment and inspection methods
Swimming pools: inspection technique, use of field testing equipment, compliance with regulations.
Camping areas/carravans: inspection methods and study of relevant regulations.
Applied pest control. rat infestation, cockroaches, mosquito and other vector controls.

References
Camp(ing) Regulations
Health (General Sanitary) Regulations, 1984
Health (Hairdressers' Shops, Beauty Parlours, etc.) Regulations, 1984
Health (Offensive Trades) Regulations, 1984
Health (Skin Protection) Regulations, 1977
Health (Swimming Pools Water Purification) Regulations, 1984

SC601 Chemical Instrumentation
This subject will be offered from 1989
Lectures: 30 hours
Assessment: Examination 20%
Project 80%
The course begins by reviewing key concepts and strategies in community health: early identification, treatment, disease prevention, health promotion.
After considering significant historical developments in the area of health education, the following topics will be treated:
(i) Social, cultural and psychological factors involved in health promotion and disease prevention behaviours, the Health Belief Model;
(ii) Health education, opportunities and responsibilities for health surveyors;
(iii) Health education strategies and techniques for health surveyors;
(iv) Instructional techn-que-and communication skills for health education;
(v) Health education program design: needs, objectives, curricula, evaluation;
(vi) Ethical issues in health education; responsibility, individual freedom, licensing, working with other professionals.

References
SC610 Environmental Health Field Practice  
This subject will be offered from 1989  
Field visit/seminars: 45 hours  
Assessment: Seminar/assignment 100%  
Examinations  
Visits to all establishments that are studied in Environmental Health for practical demonstrations; experience and evaluation. Hairdressers, tattooists/acupuncturists, is  
Current and advanced topics in environmental and public health crises that arise from time to time can be, at short notice, visited and evaluated. Applied pest control is observed in the field. The subject is flexible in its approach so that current environmental and public health crises that arise from time to time can be, at short notice, visited and evaluated.  
References  
Appropriate legislation  
Brown, Clark & Zulchuck, Environmental Health Field Practice. 1983  
Journal of Environmental Health  

SC649 Microbiology  
This subject will be offered from 1989  
Lectures and/or: 45 hours  
tutorial demonstrations:  
Assessment:  
Virology — methods of studying viruses. Characteristics, identification, infectivity and human responses to the common DNA and RNA viruses. Immunisation and methods of treatment and control of viral diseases. Rickettsias and Chlamydias — characteristics of both groups of organisms The major diseases caused by these microorganisms will be described with reference to both Australia (Trachoma and Q fever) and internationally (Typhus). Parasitology — characteristics, life cycles, methods of transmission, treatment and control of a wide range of protozoal and helminth infections of man and animals. In this unit particular attention will be given to the habitat and life cycle (if important and not treated in lectures). Specific vectors or agents of transmission such as fleas, rat, cockroach, tick, louse or snail. In addition, methods will be described for detecting parasitic infections of food and also for detecting abnormalities and malpractices. Mycology — a broad outline of systemic and fungal infections in man and methods of transmission of such infections (e.g. Barbers). Fungal yeast and yeast contamination of food with reference to mycotoxins, particularly Aspergillus flavus and aflatoxins  
References  

SC654 Chemistry  
This subject will be offered from 1989  
Lectures: 60 hours in one semester  
Assessment:  

SC655 Chemistry Practical  
This subject will be offered from 1989  
Laboratory: 45 hours in one semester  
Assessment:  
Organic techniques: Preparation, practical test. Instrumental techniques: Analysis of an unknown solid using X-ray diffractometer, analysis of a food sample using an atomic absorption spectrometer with electrothermal atomisation, experiments using an auto analyser and a laboratory computer.  

SC656 Applied Chemistry  
This subject will be offered from 1989  
Lectures: 75 hours in one semester  
Assessment: Examinations and assignments 100%  

SC664 Industrial Chemistry  
This subject will be offered from 1989  
Lectures, seminars, industrial visits  
Assessment: Examinations and assignments 67%  
Seminars 33%  
Surface coatings: Applications of protective organic surface coatings; non-convertible and convertible surface coatings, their chemistry and properties. Selected chemical processes: This course is divided into two parts. The first section deals with the catalysts used in the large-scale industrial production of organic chemicals. The concepts of organometallic chemistry to a level sufficient to allow an understanding of the design, preparation and mechanisms of such catalysts is also presented. In the second part, the students select a topic of interest to them, divided into individual areas of responsibility and each presents a talk and written report on his/her area. This is combined with a suitable Industrial visit.  

SC692 Applied Chemistry Practical  
This subject will be offered from 1989  
Laboratory: 60 hours in one semester  
Assessment: Results and reports 100%  
Instrumental techniques: Analysis of the products of an organic synthesis using chemical tests, physical measurements, an infra-red spectrometer, an NMR spectrometer and a gas chromatograph, further analysis of the unknown solid (in SC655), experiments using an infra-red data station (dedicated computer) and a high performance liquid chromatograph.  

SC693 Practical Biochemistry  
This subject will be offered from 1989  
Laboratory: 60 hours in one semester  
Assessment:  
Practical reports Research project report and seminar presentation  
This practical subject has 2 components:  
(a) A series of set experiments designed to introduce the student to immunochromatography methods including quantitative radial immunodiffusion, radioimmunoeassay, counting procedures and radiation safety, ELISA, immunoelectrophoresis 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.  

SC695 Physical Biochemistry  
This subject will be offered from 1989  
Theory: 30 hours in one semester  
Assessment: Theory 100%  
This subject examines a number of physical and physico-chemical techniques as applied to biochemical analyses. Topics considered include: Enzyme kinetics: including bi-substrate reactions. Infra-red spectroscopy. Types of vibrational motion, prediction of spectra, influence of the molecular environment, influence of temperature, interpretation of spectra. Ultra violet-visible spectroscopy: Prediction of spectra based on structure; influence of excited state, substituents, pH, solvent; analysis of protein structure. Nuclear magnetic resonance spectroscopy: Interpretation of spectra, factors that influence spectra, multi-nuclear NMR, solid state NMR. NMR imaging X-ray crystallography, Application of monochromatic X-rays in the analysis of biochemical structures. Molecular weight determination: Use of osmotic pressure and ultra centrifugation in the determination of molecular weight. Techniques of sedimentation equilibrium and sedimentation velocity.
SC696  **Mammalian Biochemistry**
This subject will be offered from 1989

**Lectures:** 30 hours in one semester  
**Assessment:** Theory 100%

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 disease. The organisation of clinical laboratories, automation and quality control.

Muscle biochemistry: The components of muscle and how they function.

SC697  **Current Topics**
This subject will be offered from 1989

**Laboratory:** 30 hours in one semester  
**Assessment:** Results and reports 100%

Instrumental techniques: A selection of the experiments in SC692.

SC698  **Industrial Biochemistry**
This subject will be offered from 1989

**Lectures:** 45 hours in one semester  
**Assessment:** Theory 100%

Industrial fermentation in the production of chemicals: Fermentorations involving Saccharomyces cerevisiae in the production of alcohol, wines and beers. Descriptions to include processing of starting material, methods of fermentation, biochemical reactions and enzymes. Variation in patterns and metabolism of enzymes in anaerobic and aerobic fermentations. The Pasteur effect and catabolite repression. Penicilillin and cephalosporin production as examples of secondary metabolism in Penicillium chrysogenum and Cephalosporium acremonium.

Industrial enzymes: Sources, methods of production and industrial uses of a range of selected enzymes. Examples of analytical uses of special enzymes such as glucose oxidase and peroxidase in glucose assays or alcohol dehydrogenase and NAD+ for estimation of ethanol. Principles of enzyme assays. Penicilillin acylase (amidase) and the production of semi-synthetic penicillins through deacylation of benzylpenicillin to 6-APA. Types of penicilillin acylases and microbial sources.


Scale-up problems: A qualitative consideration of the factors and problems involved in translating laboratory findings into pilot plant and finally production plant stages. Factors involved in scale-up to include environmental control factors, mixing relationships, power input, momentum factors, impeller speeds and volumetric mass transfer coefficient. Scale-up based on non-geometric similarity. Alteration of factors for optimising processes.

SK114  **Computer Science**
Five hours per week for one semester

A compulsory first-semester subject for degree students.

The subject introduces the student to general concepts of scientific computing and incorporates teaching the use of a modern, block-structured programming language such as Pascal or Ada. Programming assignments are an integral part of the course.

**References**
Students should consult their lecturer about suitable textbooks and reference materials.

SK115  **Computer Science**
Eight hours per week for one semester  
Prerequisite: SK114

A second-semester subject for degree students majoring in computer science.

The subject extends the programming concepts and techniques which were studied in SK114 and includes programming in a data processing environment and studies in the fundamentals of computer science.

**References**
Students should consult their lecturer about suitable textbooks and reference materials.

SK116  **Computer Science**
Four hours per week for one semester

Prerequisite: satisfactory completion of the first semester of the course

A second-semester subject for students majoring in instrumental science/mathematics or mathematics/chemistry.

The subject extends the programming concepts and techniques which were studied in SK114 and includes an introduction to the techniques of programming in a data processing environment.

**References**
Students should consult their lecturer about suitable textbooks and reference materials.

SK117  **Computer Science**
Two hours per week for one semester

Prerequisite: satisfactory completion of the first semester of the course

An optional second-semester subject for students majoring in applied chemistry or biochemistry.

The subject covers computer programming in the language BASIC and introduces the concepts and techniques of computer simulation and control. It emphasises the role and use of computers in association with laboratory equipment.

**References**
Students should consult their lecturer about suitable textbooks and reference materials.

SK203  **Computer Science**
Eight hours per week for one semester

Prerequisite: SK115

A second-year subject for degree students majoring in computer science.

An introductory study of the major aspects of computing principles and techniques, which students obtain programming practice and complete assignments which are assessed as an integral part of the course.

Topics covered include: structured programming; software engineering; operating system principles; introduction to computer organisation; file organisation and handling; data structures; assembler programming; simulation and modelling.

**References**
Students should consult their lecturer about suitable textbooks and reference materials.
Faculty of Applied Science

SK204 Computer Science 2
This subject will be offered from 1986
Lectures: 110 hours in one semester
Workshops: 10 hours in one semester
Assessment: Examination 50%
Assignments 20%
Workshops 30%

The course covers two aspects of the laboratory environment:
(a) programming in BASIC, and
(b) an introduction to simulation.

Programming in BASIC
A comprehensive study of a reasonably advanced version of BASIC
(example PDP-11, RSTSIE, BASIC) including array and file handling.

An introduction to simulation
An introduction to the concepts of simulation — programming simple
 discrete and continuous simulation systems using appropriate
 languages.

References
To be advised by the lecturer at the beginning of the course.

SK206 Computer Science
This subject will be offered from 1986
Lectures: 30 hours in one semester
Assessment: Tests and assignments

The course covers two aspects of the laboratory environment:
(a) programming in BASIC, and
(b) an introduction to simulation.

Programming in BASIC
A comprehensive study of a reasonably advanced version of BASIC
(example PDP-11, RSTSIE, BASIC) including array and file handling.

An introduction to simulation
An introduction to the concepts of simulation — programming simple
 discrete and continuous simulation systems using appropriate
 languages.

References
To be advised by the lecturer at the beginning of the course.

SK210 Applied Computing Methods
This subject will be offered from 1986
Lectures: 15 hours
Workshops: 15 hours
Assessment: Assignments 30%
Workshops 70%

Software tools: an introduction to the main software tools encountered
by environmental health specialists — job command languages, editors,
word processors, spread sheets, etc.

Programming: an introduction to fundamental programming concepts
required to support the study of software tools. BASIC, or a similar
language, will be used for this section of the course.

Packages: an introduction to the use of suitable packages by way of
simple case studies. Illustrations of statistical packages such as MINI-
TAB and SAS for tabulation and data analysis.

Computer hardware: an introduction to microcomputer hardware
architecture including peripheral devices, communications sub-systems
and current technology I/O systems (graphics, OCR).

References
To be advised by the lecturer at the beginning of the course.

SK213 Computer Science
Two hours per week for one semester
Prerequisite, satisfactory completion of the common first
year or some background in computer programming.

An elective second-year subject for students majoring in mathematics
and chemistry or instrumental science.

The subject includes study of computer programming techniques and an
introduction to computer simulation and modelling.

References
Students should consult their lecturer about suitable textbooks and
reference materials.

SK214 Computer Science
Two hours per week for one semester
Prerequisite, satisfactory completion of the common first
year or equivalent qualification and some experience in the
use of computers in business, engineering or science.

An elective second-year subject for students majoring in mathematics
and chemistry or instrumental science.

The subject provides an introduction to systems science, some aspects
of computer design and construction and a relatively advanced course
on computer simulation and modelling.

References
Students should consult their lecturer about suitable textbooks and
reference materials.

SK303 Computer Science
Nine hours per week for one semester
Prerequisite, SK203

A third-year subject for degree students majoring in computer science.

Studies at an advanced level are conducted in computing principles and
techniques, during which students gain computing experience and
complete assignments which are assessed as an integral part of the
course.

Topics covered include: software engineering (including participation in a
software hut); data structures and algorithms; computer organisation and
architecture; non-procedural programming languages; operating sys-
tems; computer graphics; and units from the following list of computer
applications: real-time systems; simulation and modelling; computer
communications; data-base system design.

All of the above applications units may not be offered in any one year.
Their availability is determined in response to student requirements.

References
Students should consult their lecturer about suitable textbooks and
reference materials.

SK304 Computer Science 3
This subject will be offered from 1987
Lectures: 110 hours in one semester
Workshops: 10 hours in one semester
Assessment: Examination 52%
Assignment 18%
Workshops 30%

A selection of topics from the following: software engineering — prin-
ciples and applications; operating system principles and architecture;
data structures and algorithms; file handling procedures and applic-
tions; assembler programming; computer architecture and organisa-
tion and simulation and modelling.

SK313 Computer Science
Three hours per week for one semester
Prerequisite, SK213 or SK214 or equivalent experience in the
use of computers in business, engineering or science.

A third-year subject for students majoring in mathematics and chemistry
or instrumental science.

The subject covers an introduction to systems science, some aspects
of computer design and construction, and a relatively advanced course on
computer simulation and modelling.

References
Students should consult their lecturer about suitable textbooks and
reference materials.

SK403 Computer Science
Eight hours per week for one semester
Prerequisite, SK303

A final-year subject for degree students majoring in computer science.

A rounding-off of the study of computing principles and techniques
undertaken in SK203 and SK303. Students obtain further computing
practice and complete assignments which are assessed as an integral
part of the course.

Topics covered include: theory of computation; software engineering;
organisation of programming languages; systems programming; com-
puter graphics; computer communications; and units from the following list of
computer applications: real-time systems, simulation and modelling,
data-base system design.

The above applications units are not all offered in any one year. Their
availability is determined in response to student requirements.

References
Students should consult their lecturer about suitable textbooks and
reference materials.
SK404 Computer Science 4
This subject will be offered from 1987
Lectures: 125 hours in one semester
Workshops: 10 hours in one semester
Assessment:
Examination 52%
Assignment 18%
Workshops 30%
A selection of topics from the following: formal logic — proof and validity in the first order predicate calculus; software engineering practices; computer graphics — elementary concepts and techniques; database concepts and technology and elements of systems programming.

SK504 Computer Science 5
This subject will be offered from 1989
Lectures: 125 hours in one semester
Workshops: 10 hours in one semester
Assessment:
Examination 52%
Assignment 18%
Workshops 30%
A selection of topics from the following: functional programming, intelligent and expert systems, logic programming, simulation and modelling, computer architecture, computer communications, design of real time systems, theory of computation and data base design techniques.

SK511 Methodology of Simulation
Forty hours in one semester
A subject of semester two of the graduate diploma course in computer simulation.
This is a study of the methods available for the analysis of systems, the translation to a satisfactory model and the validation and analysis of results. The underlying concepts are highlighted by a series of lectures covering the nature of formal deductive systems and scientific theories, models and prediction.

Topics covered include fundamentals of modelling; systems models — continuous and discrete methods; model translation; software tools for model construction; validation and analysis — statistical methods, the regenerative method; design of computer simulation experiments; formal logic; scientific theories, models and prediction, models and understanding.

References
Students should consult their lecturer about suitable textbooks and reference materials.

SK512 Digital Simulation Languages
Forty-five hours in one semester
A subject of semester one of the graduate diploma course in computer simulation.
This is a study of the use of general purpose languages for the solution of discrete and continuous simulation problems. Several practical exercises in a particular language are undertaken.

References

SK519 Project Work
Thirty hours in one semester
A subject of semester three of the graduate diploma course in computer simulation.
In this subject each student undertakes, under supervision, practical work in simulation. Each student is encouraged to undertake problems from as wide a range of disciplines as possible, but emphasis is upon projects which relate to the student’s own areas of interest. Students must submit for approval an initial brief proposal of the project work they intend to undertake.

Satisfactory completion of the project work is a necessary condition for completion of the course.
This project work continues in SK520.

SK520 Project Work/Case Studies
Seventy-five hours in one semester
A subject of semester four of the graduate diploma course in computer simulation.
In this subject the student completes the project commenced in SK519, and gives a presentation of the project that is being undertaken. Additionally, a number of other cases of simulations are examined. Each study consists of a detailed examination of some industrial or scientific problem, the understanding of which has been enhanced by the methods of computer simulation and each involves the origin of the problem, its formulation into a model, the problems associated with the implementation of the model and finally, the ultimate degree of success of the problem’s solution.

SK522 Digital Simulation Languages
Forty hours in one semester
Prerequisite, SK512
A subject of semester two of the graduate diploma course in computer simulation.
This is a study of the advanced use of general purpose languages for the solution of discrete and continuous simulation problems. Special purpose languages for the solution of continuous systems are studied (e.g. DARE-P, ASP) and several exercises in the use of these special purpose languages are undertaken.

SK523 Computer Techniques — Analogue/Hybrid
Sixty hours in one semester
A subject of semester three of the graduate diploma course in computer simulation.
The analogue computer is a parallel processor specially suited to simulation of problems in dynamics. The course deals with the components of an analogue computer, programming, scaling, hard-wiring and obtaining suitable displays. Practical experience is provided through workshops on a variety of analogue computing machines.
The subject extends to controlling analogue functions by hardware logic elements.
A hybrid computer is a combination, through a high speed communication interface, of a digital computer (a serial processor) and an analogue computer (a parallel processor). This combination provides the best features of each machine; the speed of the analogue computer with the accuracy of the digital machine. The subject covers the following topics:
1. Hybrid computer hardware: digital processor, analogue processor, communication interface, analogue-to-digital and digital-to-analogue converters.
2. Hybrid computer software: Interactive Hytran Operations Interpreter (HOI); FORTRAN Compiler, hybrid linkage routines, graphics plotting routines.

References
3. Hybrid computer applications: micro programs using stand-alone analogue and digital processors, synchronisation of analogue and digital processors, data conversion through A/D and D/A converters, closed loop hybrid operations, program control of simulation studies via both interactive and stand-alone program mode.

This subject includes lecture, demonstration and practical sessions on hybrid computation theory and applications.

References
Students should consult their lecturer about suitable textbooks and reference materials.

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 solutions to simple numeric and non-numeric problems

This subject involves the study of:
1. modern concepts of program design using a language such as Pascal;
2. the implementation of programs using FORTRAN at an advanced level; and
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.

References
Students should consult their lecturer about suitable textbooks and reference materials.

SK532 Digital Simulation Languages
Thirty hours in one semester

A subject of semester three of the graduate diploma course in computer simulation

This subject studies the use of special purpose simulation languages for the solution of discrete systems, such as GPSS, INS, CSL and one of these languages will be studied in detail. Several practical exercises are undertaken in this language.

References
Students should consult their lecturer about suitable textbooks and reference materials.

SK533 Computer Simulation
Sixty hours in one semester
Prerequisite, knowledge of a scientific programming language, SM263 Mathematics or equivalent

A subject of graduate diploma course in biomedical instrumentation.

This subject provides the student with an understanding of the use of computers to implement simulation models. It comprises a consideration of: computer simulation techniques, random number generation and pseudo-random numbers, time-step methods, analogue and hybrid computation, numerical solution techniques for ordinary and partial differential equations, principles of modelling and software packages useful for simulation.

Forty hours of the course are devoted to lectures or tutorials while the remaining twenty hours involve practical work, which is an integral part of the course.

References
Students should consult their lecturer about suitable textbooks and reference materials.

SK604 Computer Science 6
This subject will be offered from 1989

Lectures: 110 hours
Workshops: 10 hours
Assessment: Examination 52%
Assignment 18%
Workshops 30%

A selection of topics from the following: software engineering, computer graphics, computer communications, data base design, theory of computation, translator engineering, functional programming, logic programming, robotic systems and performance evaluation.

SM108 Mathematical Methods
This subject will be offered from 1986

Lectures: 75 hours in one semester
Assessment: Examinations 90%
Assignments 10%

Mathematics of finance
Simple and compound interest; annuities, net present value; interest rate of return

Numerical methods
Introduction to numerical methods; errors and their propagation, including rounding errors and loss of significance. Solution of equations and inequalities in one variable; numerical solution of non-linear equations by iterative methods (bisection, false position, secants, simple iteration, Newton-Raphson)

Precalculus
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections

Functions of one variable
Standard functions and their graphs; finite and infinite limits; limit theorems; rules for limits of rational functions; continuity. Transcendental functions: exponential, logarithmic and natural logarithm functions; trigonometric and inverse trigonometric functions; hyperbolic and inverse hyperbolic functions.

Calculus
Differentiation: geometric interpretation; derivatives of standard functions; product, quotient and chain rules; implicit differentiation; mean value theorem. Applications of differentiation: graph sketching, using first and higher order derivatives; related rates; optimisation in finite closed intervals; differentials and approximations; Taylor polynomials; L'Hopital's rule.

Integration: definite and indefinite integrals and their interpretations; fundamental theorem; integrals of standard functions; integration by substitution and by parts; improper integrals; systematic integration of rational functions and of products of trigonometric functions.

Applications of Integration
Areas, volumes, lengths of curves and surface areas of surfaces of revolution; integrals of rates of change; moments. Numerical integration: rectangle, trapezium, midpoint and Simpson's rules.

Ordinary differential equations

References
To be advised by the lecturer at the beginning of the course.

SM110 Mathematical Methods
This subject will be offered from 1986

Lectures: 45 hours
Assessment: Examination 80%
Assignments 20%


References
To be advised by the lecturer at the beginning of the course.

SM114 Mathematical Methods
Five hours per week for one semester

A subject in the degree course in applied science.

The following topics are covered:
Mathematics of finance
Errors and their propagation.
Solution of equations, including numerical solution.
Functions, relations and graphs in Cartesian co-ordinates.
Limits and continuity.
Elementary functions and their inverses.
Differential and its applications, including optimisation.
Integration and its applications, including numerical Integration and improper integrals.
Differential equations: first order separable and linear; second order.

Numerical solution.

References
References will be supplied in class.
SM116 Mathematics
Four hours per week for one semester
Prerequisite, a satisfactory standard in SM114
A subject in the degree course in applied science.
Linear algebra, functions of many variables, data presentation, probability, inferential statistics.
References
References will be supplied in class.

SM118 Mathematics
Four hours per week for one semester
Prerequisite, a satisfactory standard in SM114
A subject in the degree course in applied science.
2D polar co-ordinates, complex numbers, Boolean algebra, linear algebra, vectors, functions of many variables, data analysis and presentation, probability.
References
References will be supplied in class.

SM121 Mathematics
Three hours per week for one semester
A subject in the diploma course in applied science (environmental health).
The course introduces and consolidates the basic mathematical techniques needed by students and practitioners of environmental health.
Topics will be chosen from:
(a) basic mathematical operations, indices and logarithms, algebraic manipulations, trigonometric functions;
(b) numerical methods, use of calculators, rounding errors and their consequences;
(c) functions and graphs (algebraic, logarithmic and exponential functions), tabulation, interpolation, curve fitting, 'least square' criterion;
(d) elementary calculus, differential and applications, partial differentiation, integration, application and integration, differential equations of first order, approximate integration using Simpson's rule.
Students are expected to have a background of general mathematics. It is recommended that each student has the use of a calculator and the lecturer, on request, will advise on its purchase.
References
References will be supplied in class.

SM122 Mathematics
Fifteen hours in one semester
A subject in the diploma course in applied science (environmental health).
An introduction to probability and descriptive statistics, including:
(a) tabular and graphic presentation of observed data, frequency distributions, histograms, ogives;
(b) mean and standard deviation and other measures of central tendency and dispersion;
(c) probability theory, independent events, mutually exclusive events, conditional probability.
References
References will be supplied in class.

SM127 Mathematics 1
This subject will offered from 1986
Lectures: 75 hours in one semester
Assessment:
Tests 90%
Assignments 10%
Mathematics of finance
Simple and compound interest; annuities, net present value; internal rate of return.
Numerical methods
Introduction to numerical methods; errors and their propagation, including rounding errors and loss of significance. Solution of equations and inequalities in one variable; numerical solution of non-linear equations by iterative methods (bisection, false position, secant, simple iteration, Newton-Raphson).
Plane analytic geometry
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

SM143 Mathematics 2
This subject will offered from 1986
Lectures: 75 hours in one semester
Assessment:
Tests 90%
Assignments 10%
Mathematics of finance
Simple and compound interest; annuities, net present value; internal rate of return.
Numerical methods
Introduction to numerical methods; errors and their propagation, including rounding errors and loss of significance. Solution of equations and inequalities in one variable; numerical solution of non-linear equations by iterative methods (bisection, false position, secants, simple iteration).
Plane analytic geometry
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

SM144 Mathematics 3
This subject will offered from 1986
Lectures: 75 hours in one semester
Assessment:
Tests 90%
Assignments 10%
Mathematics of finance
Simple and compound interest; annuities, net present value; internal rate of return.
Numerical methods
Introduction to numerical methods; errors and their propagation, including rounding errors and loss of significance. Solution of equations and inequalities in one variable; numerical solution of non-linear equations by iterative methods (bisection, false position, secants, simple iteration).
Plane analytic geometry
Coordinate geometry in Cartesian coordinates; graphs of linear, polynomial, rational and power functions and of conic sections.

SM154 Mathematical Methods
Five hours per week for one semester
A subject in the degree course in applied science
The following topics are covered:
Mathematics of finance.
Errors and their propagation.
Solution of equations, including numerical solution.
Functions, relations and graphs in Cartesian co-ordinates.
Limits and continuity.
Elementary functions and their inverses.
Differentiation and its applications, including maximisation and minimisation.
Integration and its applications, including numerical integration and improper integrals.
Differential equations: first order separable and linear; second order linear with constant coefficients.
Numerical solution.
References
References will be supplied in class.

SM155 Operations Research 1
Two hours per week for one semester
Prerequisite, SM114
A major subject in the degree course in applied science
Methodology of operations research
Linear programming
Inventory control
Workshops
References
References will be supplied in class.

SM156 Applied Statistics 1
Three hours per week for one semester
Prerequisite, SM114
A major subject in the degree course in applied science.
Data presentation: ordering, summarising and understanding data
Relationships between variables: measures of association, summarising relationships, index numbers.
Probability: standard discrete distributions, conditional probability, Markov processes, acceptance sampling
Inferential statistics: continuous distributions, sampling distributions, estimation, hypothesis testing.
References
References will be supplied in class.
SM157  Mathematics 1
Three hours per week for one semester
Prerequisite: SM114
A major subject in the degree course in applied science
- Linear co-ordinates in two dimensions.
- Complex numbers.
- Linear algebra: matrices, determinants and systems of linear equations.
- Vectors and geometry in two and three dimensions, three-dimensional co-ordinate systems.
- Functions of many variables: graphs, partial differentiation, directional derivatives, optimisation.
- Multiple integrals and applications.
- Vector integration, line and surface integrals, vector calculus.

References
References will be supplied in class.

SM210  Mathematical Methods
This subject will be offered from 1986
Lecture/tutorial: 45 hours
Assessment: Examination 80%, Assignments 20%
Probability theory. Exploratory data analysis and inferential statistics.
- Non-parametric methods. Regression, correlation and analysis of variance. Experimental design; survey and sampling techniques. Calculations in medical demography and epidemiology; measures of risk and of association; types of study.

SM215  Mathematical Methods
This subject will be offered from 1986
Lectures: 60 hours in one semester
Assessment: Examinations 100%
2D polar coordinates
- Definitions; graphs of equations; transformation to and from Cartesian coordinates.

SM213  Mathematics
Two hours per week for one semester
Prerequisites: SM121 and SM122
A subject in the diploma course in applied science (environmental health).
An introduction to sampling and the interpretation of statistical data including:
- (a) examples of probability distributions (discrete and continuous): binomial, Poisson and normal;
- (b) sampling theory: means, difference of means t-, \( \chi^2 \) and \( F \)-distributions;
- (c) estimation theory: estimating means, difference between two means, proportion, difference between two proportions and estimating the variance and the ratio between two variances;
- (d) tests of hypotheses, including test of independence.

SM219  Mathematical Methods
This subject will be offered from 1986
Lectures: 60 hours in one semester
Assessment: Examinations 100%
2D polar coordinates
- Definitions; graphs of equations; transformation to and from Cartesian coordinates.

SM214  Mathematical Methods
This subject will be offered from 1986
Lectures: 60 hours in one semester
Assessment: Examinations 100%
Linear algebra
- Matrices and matrix algebra; determinants and their evaluation.
- Systems of linear equations: Gaussian elimination; matrix inversion; procedures for numerical solution by direct or iterative methods.
- Functions of many variables
- Partial differentiation and applications; differentials and approximations; optimisation and applications (including least squares) with first and second derivative tests.
- Data presentation
- Ordering data; frequency distributions, stem and leaf displays, cross-tabulation (2 and n way), ranking. Numerical summaries: mean, mode, median, percentiles, range, interquartile range, mean absolute deviation, variance, standard deviation, coefficient of variation. Graphical presentation: histograms, pie charts, pictograms, polygons, bar charts, scattergrams.
- In the interpretation of any of the above, informal discussion of measures of association is anticipated.
- The following SAS procedures may be used: FREQ (frequency and cross-tabulation values), PLOT (printing plotting), SUMMARY (summary statistics).

Probability
- Definitions and concepts of probability; calculation using addition and product rules; conditional probability and independence; probability distributions: discrete variates, including binomial, Poisson and hypergeometric distributions; continuous variates, including normal distribution; mean and variance.

Inferential statistics
- Sampling distributions; central limit theorem. Confidence intervals and hypothesis tests on means, variances and proportions.

References
To be advised by the lecturer at the beginning of the course.
SM225 Operations Research 2
This subject will be offered from 1986

Lectures: 30 hours in one semester
Assessment: All assessment is open book

SM226 Applied Statistics 2
This subject will be offered from 1986

Lectures: 45 hours in one semester
Assessment: Examinations 100%

SM227 Mathematics 2
This subject will be offered from 1986

Lectures: 45 hours in one semester
Assessment: Tests 100%

SM255 Operations Research 2
Three hours per week for one semester
Prerequisites, SM115 and SM157

SM256 Applied Statistics 2
Two hours per week for one semester
Prerequisite, SM156

SM257 Mathematics 2
Three hours per week for one semester
Prerequisite, SM157

SM263 Mathematics
Four hours per week for one semester
Prerequisite, completion of the first year

A subject in the degree course in applied science

Topics include. sequences and series, tests for convergence, complex numbers, functions, derivatives, conformal mapping, multiple integrals, Stokes' and Gauss' theorems, Differential equations, linear,
SM304 Industrial Case Studies
This subject will be offered from 1987
Lectures: 30 hours in one semester
Assessment: Assignments 100%

This subject enables the student to appreciate the problems related to industrial practice through case studies (both individual and group), a study of the organisation and structure of a company, relevant literature investigations and seminars by invited speakers from industry. Further, additional introductory lectures are given on other materials: divergent to work experience (such as accountancy, economics and data processing) by experts within the Institute. Students also gain experience in job applications and job interview techniques.

SM315 Mathematical Methods
This subject will be offered from 1987
Lectures: 60 hours in one semester
Assessment: Examinations 80%, Assignments 20%

Sequences and series

Complex analysis
Algebra and geometry of complex quantities. Functions of a complex variable, differentiability. Cauchy-Riemann equations, conformal transformations.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. Special emphasis on gradient of a scalar field, directional derivative, divergence and curl of a vector field. Line, surface and volume integrals. Field theory.

Statistics

SM319 Mathematical Methods
This subject will be offered from 1987
Lectures: 60 hours in one semester
Assessment: Examinations 80%, Assignments 20%

Sequences and series

Complex analysis
Algebra and geometry of complex quantities. Functions of a complex variable, differentiability. Cauchy-Riemann equations, conformal transformations.

Real analysis

Vector analysis
Basic vector manipulation including calculus of vector functions. 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
This subject will be offered from 1987
Lectures: 30 hours in one semester
Assessment: Examination 100%

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 simulation 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 individually present oral reports on a case study. Next, working in groups they tackle an unstructured problem related to some 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 vineyard; giving recommendations to Government about the fluoridation of water; installation of new machines for urine sampling in hospitals and GP clinics. An oral preliminary report on the progress to 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
This subject will be offered from 1987
Lectures: 30 hours in one semester
Assessment: All assessment is open book

Inferential statistics
Inferences for medians, variances with the addition of test for the difference of two means with unequal variances. Type I and II errors: normal, 2 distributions. Enumerative data analysis; contingency tables, multinomial experiments, goodness-of-fit.

Regression analysis
Aims and methodology of regression analysis; reference to the economic models studied previously.

Correlation
Pearson, Spearman, partial correlation coefficients; limitations of same; tests of significance.

Ordinary least squares (OLS); linear model definition and assumptions; least squares criterion; estimation of parameters using ‘normal’ equations and matrices; applications to both simple and general models; OLS applied to nonlinear models.

Tests of significance: goodness-of-fit using parameter estimates; confidence intervals for parameters.

Applications of OLS to time series: graphical approach, time series models; secular trend, origin and time period changes; forecasting using seasonal indices.

Properties of least squares estimates. Use of computer packages such as SAS.

SM327 Mathematics 3
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: Tests 100%

Introduction to formal mathematics
Proofs and theorems; example and counter example; necessary and sufficient conditions; equivalence; types of proof; mathematical induction.

Sequences and series
Definition of a sequence; convergence, limits; types of divergent behaviour. Infinite series; some simple tests of convergence; familiar series; properties of power series. Taylor’s theorem; Taylor series; uniform convergence.
Functions of many variables
Graphs of surfaces as functions of two or three variables; partial differentiation and applications; directional derivatives and gradients; tangent planes to surfaces; differentials and approximations; optimization and applications (including least squares) with first and second derivative tests.
Multiple integrals: evaluation and transformation; applications to volumes, moments, areas, surface areas.
Vector fields; line and surface fields; line and surface integrals; vector calculus.

Difference equations
Equations of first and second order; linear equations with constant coefficients; applications; numerical techniques.

SM355 Operations Research 3
Four hours per week for one semester
Prerequisites, SM255, SM256, SM257
A major subject in the degree course in applied science
Linear and integer programming.
Classical optimization.
Markov chains and queuing theory.
Industrial projects: students, working in groups and supervised by a staff member, undertake consultancy projects for outside organisations.

References
References will be supplied in class.

SM356 Applied Statistics 3
Three hours per week for one semester
Prerequisite, SM256
A major subject in the degree course in applied science
Regression and analysis of variance.
Violation of the basic assumptions for ordinary least squares
Nonparametric statistics.
Sampling methods.
Sample surveys.

References
References will be supplied in class.

SM357 Mathematics 3
Two hours per week for one semester
Prerequisite, SM257
A major subject in the degree course in applied science
Multidimensional space: algebra, geometry, and calculus.
Functional analysis: Banach space, transforms, functionals.
Combinatorial analysis: arrangements, selections, partitions
Introduction to algebra: applications in coding.
Calculus of variations.

References
References will be supplied in class.

SM363 Mathematics
Three hours per week for one semester
Prerequisite, SM263
A subject in the degree course in applied science.
The topics covered in this subject may be varied to accommodate the needs and interests of the students undertaking the subject.
The core will include the following: modern algebra with applications to self-correcting codes and generation of pseudo-random numbers, partial differential equations (with emphasis on numerical aspects), selected topics in statistics and/or operations research.

References
References will be supplied in class.

SM404 Project Management A
This subject will be offered from 1987
Lectures: 20 hours in one semester
Project: 15 hours in one semester
Seminars: 10 hours in one semester
Assessment: All assessment is open book
Tests 50%
Assignments 20%
Project—Oral 15%
Written 15%

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 work experience year.

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 staff member with suitable progress reports. In addition, they will be expected to obtain formal approval for the work that they are undertaking from the appropriate staff member. In short, they will be expected to manage the project along the lines of the topics discussed. Oral and written reports will be required at the end of the semester.

SM419 Mathematical Methods
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: Examinations 100%

A selection from:
Modern algebra with applications
Sets; groups; fields; applications to self-correcting codes; Hamming codes and pseudo-random numbers.
Differential equations — numerical solution
Ordinary differential equations: initial value problems; Runge-Kutta; stability; boundary value problems; shooting methods; finite difference methods; partial differential equations: classification; finite difference methods; stability.

SM425 Operations Research 4
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: All assessment is open book
Tests 50%
Assignments 50%

Linear programming
Simplex method; Big M method; two phase method; duality; dual simplex method; sensitivity; revised simplex techniques; bounded variables; parametric programming; decomposition; industrial applications; transportation problems. Use of computer packages such as SAS/OR.

Classical optimisation
Types of mathematical programming (optimisation) problems; global & local optimal values; types of solutions; non-linear optimisation; unconstrained optimisation; constrained optimisation; method of Lagrange multipliers; Kuhn-Tucker theorem; numerical techniques, search, gradients, Quasi-Newton; penalty functions; sensitivity analysis.

Markov chains and queuing theory
Definitions of stochastic processes. Markov chains; transition matrix; absorbing chains; applications in decision-making; queuing theory; transient and steady state; general Markov model (birth-death queuing model); Little’s formulae; single server; multiple server; self service; limited capacity — limited population; general service times; network queuing systems; application of simulation in queuing systems; practical applications; use of a computer package.
SM426  Applied Statistics 4
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: Examinations 100%

Regression and analysis of variance
Analysis of variance: analysis of completely randomised design; randomised block designs.
Regression analysis: use of analysis of variance techniques to perform regression analysis, reduced and full models, improving fit with addition of regressors; tests of equality between coefficients from different samples, of stability of coefficients to sample size, of restrictions imposed on parameters.
Violation of basic assumptions: randomness, zero mean, constant variance; normality of error term; autocorrelation; multicollinearity.

SM427  Mathematics 4
This subject will be offered from 1987
Lectures: 45 hours in one semester
Assessment: Tests 100%

Linear algebra
Linear dependence of vectors; vector spaces, subspaces and bases; inner product and orthogonality; Gram-Schmidt process. Matrices: rank; elementary operations and equivalence; nullspace and range. Square matrices, eigenvalues and eigenvectors; similarity of simple matrices; real symmetric matrices; applications including quadratic forms, Markov chains.
Functions and function series
Fourier series of common periodic functions; half-range expansions. Fourier transforms. Gamma and Bessel functions; Legendre polynomials.
Partial differential equations
General solution of simple equations by integration; boundary value problems with common equations using Fourier series.
Multidimensional space
Real n-dimensional space $\mathbb{E}^n$; linear independence and bases, subspaces, hyperplanes and convex sets, inner product; orthonormal bases; resolution for given basis. Distance between points; open, closed, bounded sets; limits of sequences. Mappings $\mathbb{E}^n \to \mathbb{E}^m$; limits and continuity of functions.
Linear functions
Matrix form, rank; kernel and image as subspaces. Geometry of linear transformations (rotation of axes, etc.); Canonical forms, definiteness, etc. Manipulation of matrices; functions of a matrix, including Cayley-Hamilton theorem, matrix series. Applications to coding and to solution of differential equations.

SM455  Operations Research 4
Five hours per week for one semester
Prerequisite: SM456

A major subject in the degree course in applied science.
Industrial projects: students, working in groups and supervised by a staff member, undertake consultancy projects for outside organisations.
Seminars: students present a seminar, comprising an overview plus a case study, on an agreed topic.

SM456  Applied Statistics 4
Three hours per week for one semester
Prerequisite: SM455

A major subject in the degree course in applied science.
Simultaneous equation models: definition, identification, methods. Sampling methods.
Sample surveys: practical projects, lectures from practitioners.

SM504  Project Management B
This subject will be offered from 1989
Lectures: 20 hours in one semester
Project: 10 hours in one semester
Assessment: Tests 25%
Assignments 45%
Project: Oral 15%
Written 15%

Applied research/project management
Further topics in the theory of project management; decision-making; types of decisions; how to make decisions.
Guest speakers from industry may be used.

Project sell
Students, usually working in groups, prepare and present a project proposal.

Work study
Work study: definition and terminology; applications and objectives.
Method study: definitions and terminology; the six basic steps; applications and objectives; techniques of recording; critical examination procedures; principles of motion economy. Work measurement: definitions and terminology; applications and objectives; techniques used to obtain standard and allowed times; work unit values, applications of allowances. Applications of work study in industry.

SM511  Mathematical Simulation Techniques
Three hours per week for one semester

A subject of the graduate diploma course in computer simulation.
Topics include: probability, frequency distributions, confidence intervals, goodness of fit tests, sampling from distributions, random number generators, pseudo-random numbers, tests for randomness.

References
References will be supplied in class.

SM512  Mathematical Simulation Techniques
Forty hours in one semester
Prerequisite: SM511

A subject of the graduate diploma course in computer simulation.
A survey of methods used in the numerical solution of ordinary and partial differential equations.

References
References will be supplied in class.

SM513  Mathematical Simulation Techniques
Three hours per week for one semester
Prerequisite: SM511

A subject of the graduate diploma course in computer simulation.
The topics covered may be varied to accommodate the needs and interests of the students undertaking the subject. The core comprises the following:
Analytic and simulation approach to operations research. The design, testing and validation of simulation models, output of results, length of run, steady state, variance reduction techniques.
These techniques are applied to queuing and inventory models. Further models in forecasting, allocation, sequencing and replacement may be discussed.

References
References will be supplied in class.

SM519  Mathematical Methods
This subject will be offered from 1989
Lectures: 45 hours in one semester
Assessment: Examinations 100%

Linear programming
Formulation; graphical solution; simplex algorithm; optimality and feasibility conditions; artificial variable techniques; degeneracy; unbounded solution; dual problem and post optimality analysis; dual simplex.
Use of computer packages such as SAS/OR.

Stochastic processes and their applications
Review of probability; Markov chains; Poisson processes; branching processes; birth and death processes; simple queueing processes; use of computer packages.
SM525 Operations Research 5
This subject will be offered from 1989
Lectures: 45 hours in one semester
Project: 15 hours in one semester
Assessment:
- All assessment is open book
- Tests: 40%
- Assignments: 35%
- Project: Oral 10%
- Written: 15%

Dynamic programming
Introduction to dynamic optimisation; recursive algorithm; computational procedures; forward and backward computations; the problem of dimensionality; solution of mathematical programming; applications.

Use of computer packages such as DYNACODE.

Advanced forecasting
Simple regression and correlation; multiple regression and correlation; the Box-Jenkins method; autocorrelation; Box-Jenkins and Bayesian models; applications using forecasting packages such as SAS/AR.

Financial modelling
General financial modelling; consolidations; financial statement summarises; models; capital investment techniques; multivariate statistics; discounted cash flow; linear programming; corporate modelling; capital allocation; how models are acquired; broad guidelines of development; cost of development; 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 semester both oral and written reports are given to the clients.

SM526 Applied Statistics 5
This subject will be offered from 1989
Lectures and seminars: 45 hours in one semester
Assessment:
- Examinations: 67%
- Assignments: 33%

Simultaneous equation models
Simultaneous equation models: definition; dependence of variables; solution; Identification; problem of; rules for; testing for identifying restrictions. Simultaneous equation methods: indirect least squares; instrumental variables; two-stage least squares. Testing the forecasting power of an estimated model.

Sampling methods
Estimators for means totals and proportions for a simple random sample design; sample size determination; concept of an EPSEM design; design effect; stratified sampling; selection by proportional and optimal allocation; variance calculations; systematic selection; cluster sampling in the Australian Population Survey (Monthly).

Sample surveys
Introduction to survey methods; general sampling concepts; questionnaire design; interviewing problems; pilot surveys; mail surveys; interviewer-based surveys; telephone surveys.

SM527 Mathematics 5
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Tests 100%

Non-linear analysis
Differentialiability: Jacobian; change of basis. Real functions: Taylor expansions; extreme points and Hessian. Implicit function theorem. Transformation of integrals, etc.

Functional analysis
Function space as a linear and topological space; norm and inner products; Banach space. Linear transforms and functionals; other transforms; special bases (especially orthonormal sets).

Combinatorial analysis
Systematic techniques of listing and of counting for arrangements, sections, partitions, etc. Use of recurrence relations and series. Applications to selected problems.

Algebraic methods
Introduction to algebra; Galois fields. Applications to self-correcting codes: linear block codes, BCH codes.

Calculus of variations
Constrained maxima and minima: Lagrange multipliers; Euler-Lagrange method for local optimisation of simple variable problem; constraints. Applications; Rayleigh-Ritz approximate method.

SM625 Operations Research 6
This subject will be offered from 1989
Lectures: 45 hours in one semester
Project: 15 hours in one semester
Seminars: 15 hours in one semester
Assessment:
- All assessment is open book
- Tests: 30%
- Assignments: 30%
- Project: Oral 10%
- Written: 15%
- Seminar: 15%

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; MP* approach; computer package COPICS; 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; other models.

Scheduling
The job-shop process; classification of scheduling problems; measures for schedule evaluation; finite sequencing for a single machine; flow-shop scheduling; general n/m job-shop problem; applications; working with computer packages such as SAS/AR.

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
The students, working in groups and supervised by a staff member who 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 semester both oral and written reports are given to the clients.

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
This subject will be offered from 1989
Lectures and seminars: 45 hours in one semester
Assessment:
- Examinations: 67%
- Assignments: 33%

Non-parametric statistics

Sampling methods
Ratio estimation; sampling equal and unequal clusters; PPS sampling, measures of size; sample size control; cluster homogeneity; post stratification; weighting; non-sampling error; adjustments for non-response.

Sample surveys
Practical survey projects; group discussions; specialist lecturers from survey practitioners.

SP106 Physics
This subject will be offered from 1986
Lectures: 54 hours in one semester
Tutorials: 7 hours in one semester
Laboratory: 14 hours in one semester
Assessment:
- Examination: 70%
- Laboratory: 20%
- Assignment: 10%

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, polarized light, birefringence, retarder plates, optical communications, fibre optics.
Atomic and nuclear physics: Photoelectric effect, photon-electron interactions, De Broglie waves, forces between nucleons, nuclear binding energies, radioactive decay, nuclear reactions.

DC circuits: electrical quantities and circuits, electrical instruments and capacitance.

References
To be advised by the lecturer at the beginning of the course.

**SP111 Physics**
Three hours of theory and two hours of practical work per week for one semester
Continuous assessment by tests and practical work
A first-year subject in the diploma course in applied science (environmental health).

Properties of matter: gases, liquids, solids, change of state, calorimetry, temperature measurement.

Acoustics: waves, vibratory motion
Electricity: electromagnetism, electrical measurements (DC) and (AC).

References
Consult the lecturer in charge.

**SP112 Physics**
Two hours of theory and two hours of practical work per week for one semester
Prerequisite: SP111
Continuous assessment by tests and practical work
A first-year subject in the diploma course in applied science (environmental health).

The atom: emission and absorption of radiation, X-rays.
The nucleus: radioactivity, nuclear reactions, radioactivity measurements.
Electromagnetic waves, geometric and physical optics, signals and signal processing, transducers, instrument principles. Laser applications: Industrial metrology.

References
Consult the lecturer in charge.

**SP113 Instrumental Science**
Thirty-two hours in one semester
Prerequisite: satisfactory completion of the first semester of the course
A second-semester subject for degree students majoring in instrumental science.

An introduction to the principles of measurement and instrumentation involving electronic information coding and decoding, both analogue and digital.

Laboratory work includes workshop experience, and assessment is by theory tests and laboratory/workshop reports.

**SP114 Physics**
Five hours per week of theory, practical work and tutorial classes
Assessment by assignments, practical work and examination
A first-semester subject for degree students.

Motion and forces, thermal physics, optical systems, atomic and nuclear physics, DC circuits.

Textbooks
Consult the lecturer in charge.

**SP115 Physics**
Eight hours per week of theory, practical work and tutorial classes
Prerequisite: SP114
Assessment by assignments, practical work and examinations
A second-semester subject for degree students majoring in biophysics and instrumental science or computer science and instrumental science.

Electricity and magnetism, vibrations and waves, structure and properties of matter, modern physics AC circuits, nuclear physics

Textbooks
Consult the lecturer in charge.

**SP116 Physics**
Four hours per week of theory, practical work and tutorial classes
Prerequisite, satisfactory completion of the first semester of the course
Assessment by assignments, practical work and examination
A compulsory second-semester subject for degree students majoring in instrumental science and chemistry or mathematics and an optional subject for students majoring in applied chemistry or biochemistry.

Electricity and magnetism, vibrations and waves, properties of matter, modern physics.

Textbooks
Consult the lecturer in charge.

**SP117 Instrumental Science**
Thirty-six hours in one semester
Prerequisite, satisfactory completion of the first semester of the course
An optional second-semester subject for degree students majoring in applied chemistry or biochemistry.

An introduction to principles of measurement, analogue electronic instrumentation, and sensing devices and circuits.

Laboratory work reports and theory tests contribute to assessment.

**SP119 Physics**
This subject will be offered from 1986
Lectures: 45 hours
Practical: 30 hours
Assessment: Theory 67%
Experiments 33%
Laboratory work 40%

Matter

Acoustics
Periodic motion, wave motion, interference, free and forced vibrations, resonance, standing waves, modes of vibration, intensity and loudness, measuring devices, shock waves.

Electricity
Charge potential, capacitance, steady current. Ohm’s law, resistance, varying current, Faraday’s law, inductance, periodically varying current (resonance radiation), electrical measurements — multimeter, VTVM, CRO frequency counter bridges, AC and DC.

References

**SP123 Biophysics**
Four hours per week for one semester
Prerequisite, satisfactory completion of the course
Assessment is continuous by test and practical work reports
A second-semester subject for degree students majoring in biophysics.

Biophysics p† clinical practice, physics in physiological systems. Structural anatomy, kinesiological aspects. Control system interactions, control in physiological systems, endocrine, reproductive and metabolic aspects.

Reference

**SP206 Instrumental Science**
This subject will be offered from 1986
Lectures: 16 hours in one semester
Laboratory: 14 hours in one semester
Assessment: Examination 60%
Laboratory work 40%

An introduction to the principles of measurement and instrumentation
An introduction to analogue systems: circuits based on the semiconductor diode and the ideal operational amplifier.

Reference
SP210 Instrumental Science 2
This subject will be offered from 1986
Lectures: 45 hours in one semester
Laboratory: 15 hours in one semester
Assessment: Examination 65%
Assignment 10%

This introduction to the principles of measurement and instrumentation.
An introduction to analogue systems: circuits based on the semiconductor.
Amplifiers, diodes, and the ideal operational amplifier.
An introduction to digital systems: combinational logic and simple counting.
An introduction to the implementation of sequential logic systems.

Reference

SP227 Bioelectric Phenomena
Four hours per week for one semester
Prerequisite: SP123 or equivalent
Continuous assessment by tests and practical work
A third-semester subject for students majoring in biophysics
Electrodes in biomedical applications.
Nervous conduction. Synapses. Autonomic nervous system

References

SP228 Contractile Dynamic Systems
Four hours per week for one semester
Prerequisite: SP123 or equivalent
Continuous assessment by tests and practical work
A third-semester subject for students majoring in biophysics.
Ionic and dynamic relations in skeletal, smooth and cardiac muscle.

Reference

SP219 Physics
This subject will be offered from 1986
Lectures: 30 hours
Practical: 30 hours
Assessment: Theory 67%
Experiments: 33%
The atom: descriptive treatment of emission and absorption of energy, ionisation spectra, thermonic and photo-electric emission of electrons, x-radiation.
The nucleus: proton and neutron, binding energy, instability and radioactivity, 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, recording and interpreting signals, instrument loading, hysteresis, calibration, lasers: measurement of flow rate, particle density, etc.
Meteorology: preparatory to role of stacks in air pollution

References

SP308 Physics
Four hours per week for one semester
Assessment: by tests and assignments
A fourth-semester subject for students majoring in biophysics.
This subject develops a thorough appreciation of the physical principles involved in the operation of solid state electronic devices.
Topics covered include electromagnetic radiation, classical and statistical mechanics, quantum mechanics and solid state physics.

SP307 Signals and Systems
Four hours per week for one semester
Assessment is by tests and assignments
A fourth or sixth-semester subject for students majoring in instrumental science.
SP309  Physics 3
This subject will be offered from 1987
Lectures:  60 hours in one semester
Assessment: Examination 100%

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  Instrumental Science 3A
This subject will be offered from 1987
Lectures:  30 hours in one semester
Laboratory:  30 hours in one semester
Assessment:  Examination 60%
Laboratory 40%

Basic discrete component analogue instrumentation: AC theory, transducers, common semiconductor devices and circuits. Devices to be covered include common types of diodes, bipolar and field effect transistors.
An introduction to optical principles as applied to scientific Instruments: usage of interferometers, direct memory access, the IEEE 4 instrumentation bus an introduction to instrumentation design.

SP317  Scientific Instrumentation
Four hours per week for one semester
A fourth or sixth-semester subject for students majoring in instrumental science.
Topics include operational amplifiers, ideal and non-ideal behaviour, stability of amplifier circuits, oscillators and waveform generation, multipliers and logarithmic circuits, characteristics of scintillation and Geiger counters, measurement of nuclear radiation and preparation of sources, and pulse counting and analysis.

SP318  Digital Systems
Four hours per week for one semester
A fourth or sixth-semester subject for students majoring in instrumental science.
Topics include serial and parallel interfacing to a microcomputer, the use of interrupts, direct memory access, the IEEE 4 instrumentation bus an introduction to instrumentation design.

SP324  Biophysics 3A
This subject will be offered from 1987
Lectures:  39 hours in one semester
Tutorial:  21 hours in one semester
Assessment:  Examination 80%
Practical 20%

Electrode processes: half cell potentials, overpotentials, impedance, microelectrodes.
Membrane phenomena: Fick's laws, Nernst and Donnan equilibrium, osmosis, Goldman equation, Ussing flux ratio equation, 'pore' hypothesis.
The action potential: the voltage clamp and the Hodgkin Huxley equations, strength-duration curves, neuropathies.
Synaptic transmission: quantal nature of transmitter release.
Autonomic nervous system: structure and function, divisions, alpha and beta receptors and their blockade.

SP325  Biophysics 3B
This subject will be offered from 1987
Lectures:  39 hours in one semester
Tutorial:  21 hours in one semester
Assessment:  Examination 80%
Practical 20%

Muscle: length tension relationships, Hill equation, the electromyogram, ultrastructure, excitation-contraction coupling, sliding filament theory, metabolic aspects, smooth muscle, pathophysiology of muscle.

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, impedance, effects of junctions, blood rheology, atherosclerosis, Starling's hypothesis of the capillary system, mass transport, flow in collapsible tubes, blood flow in particular organs, Guyton's model.

SP327  Respiratory and Renal Adaptations
Four hours per week for one semester
Prerequisite, SP227 or SP228
Continuous assessment by tests and practical work
A fourth-semester subject for students majoring in biophysics.
Respiratory mechanics and respiratory function testing. Pulmonary pathophysiology, Anaesthesia, Renal biophysics including dialysis. Foetal and neonatal development and monitoring.

References
West, J.B. Respiratory Physiology. 2nd edn, Balt., Williams and Wilkins, 1979

SP328  Physiological Control Systems
Four hours per week for one semester
Prerequisite, SP228
Continuous assessment by tests and practical work
A fourth-semester subject for students majoring in biophysics.

References

SP330  Instrumental Science 3B
This subject will be offered from 1987
Lectures:  30 hours in one semester
Laboratory:  30 hours in one semester
Assessment:  Examination 60%
Laboratory 40%


SP355  Physics
Six hours per week for one semester
Assessment is continuous by tests and practical assignments
A third-year subject for students majoring in applied chemistry.
Quantum mechanics, nuclear physics, radiation physics, concentrating on the properties and instrumentation of the main regions of the electro-magnetic spectrum of interest to chemists. Instrumentation physics.

References
Consult the lecturer in charge.
SP356 Physics
This subject will be offered from 1987
Lectures: 24 hours in one semester
Laboratory: 21 hours in one semester
Assessment: Examination 58%
Laboratory reports 42%
Quantum Physics (10 hours)
Black-body radiation, photo-electric effect. De Broglie's hypothesis, Uncertainty principle.
Schrödinger's equation — expectation values, operators, eigen values and eigen functions. Applications from potential discontinuities, barrier penetration, particle in a box, harmonic oscillator, particle decay.
Quantum theory of H atom by solution of Schrodinger's equation.
Angular momentum; probability density and orbitals.
Nuclear Physics (14 hours)
Basic nuclear properties.
Structure and models.
Radioactivity and nuclear reactions.

SP401 Signals and Systems
This subject will be offered from 1987
Lectures: 50 hours in one semester
Laboratory: 10 hours in one semester
Assessment: Examination 85%
Laboratory 15%
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.

SP409 Physics 4
This subject will be offered from 1987
Lectures: 20 hours in one semester
Laboratory: 10 hours in one semester
Assessment: Examination 75%
Laboratory 25%

SP410 Instrumental Science 4A
This subject will be offered from 1987
Lectures: 30 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Examination 60%
Assignments Laboratory 40%
Basic analogue instrumentation building blocks: general purpose amplifiers, instrumentation amplifiers, oscillators and voltage regulators integrated circuit component subsystems.
An introduction to nuclear instrumentation: nuclear transducers, nuclear measurement techniques and circuits, analysis of nuclear measurements.

SP417 Analogue Systems
Four hours per week for one semester
A final-semester subject for students majoring in instrumental science.
Topics include: interference, noise and noise coupling; analogue to digital and digital to analogue conversion instrument systems; control systems, modelling, electrical and mechanical systems; transfer function, open and closed loop systems, negative and positive feedback, root locus techniques, compensation techniques, computer control systems.

SP418 Advanced Instrumentation
Four hours per week for one semester
A final-semester subject for students majoring in instrumental science.
Topics include: fault finding in digital instrumentation systems, direct memory access, 16-bit systems, custom integrated circuits, radiation measurements, radiometric and photometric units, colourimetry, colour systems and measurement, monochromator and spectrometer design, infra-red and ultra-violet sources and measurement. Selected instrumentation system design examples.

SP419 Occupational Health and Safety
This subject will be offered from 1987
Lectures or tutorial/demonstration
Assessment: Examination 100%
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.
Analysis of court and tribunal decisions bearing on occupational health and safety.
Toxicology (15 hours)

SP424 Biophysics 4A
This subject will be offered from 1987
Lectures: 36 hours in one semester
Laboratory: 24 hours in one semester
Assessment: Examination 80%
Practical 20%
Respiratory system: structure and function, lung volumes and dead space, diffusive processes.
Blood flow: ventilation/perfusion ratio measurement and significance.
Gas transport: Bohr and Haldane effects, acid/base status, respiratory mechanics, control of respiration, lung function testing, lung diseases.
Renal vasculature: the juxtaglomerular apparatus, kidney function tests, countercurrent multiplication, control of kidney function, renal pathophysiology, the artificial kidney.

References
To be advised by the lecturer at the beginning of the course.
SP425 Biophysics 4B

This subject will be offered from 1987

Lectures: 39 hours in one semester
Laboratory: 21 hours in one semester

Tutorials:
Assessment: Examination 60%
Practical 40%

Physiological control systems: control theory, signal flow diagrams, fundamental block representations, open-loop gain.

Dynamic responses: Bode and Nyquist analysis, transfer function discovery — examples of physiological investigations — cardiovascular, respiratory, acid-base and thermal control. Multicomponent systems and methods of analysis: models of membrane systems, mathematical models of the arterial system.

Intensive-care instrumentation: design philosophies, data processing and management; ambulatory monitoring and telemetry. Cardiopulmonary bypass, requirements and design.

References

SP427 Sensory Systems

Four hours per week for one semester

Prerequisites, either SP327 or SP328 and SP227

Continuous assessment by tests and practical work

A final-semester subject for students majoring in biophysics.

Topics include: receptor functions, psychophysics, somatic sensation, auditory and vestibular operation, chemical senses, volume conductor theory.

References

SP428 Higher Cortical Functions

Four hours per week for one semester

Prerequisites, either SP327 or SP328 and SP227

Continuous assessment by tests and practical work

A final-semester subject for students majoring in biophysics.

Topics include imaging, vision, motor control and higher cortical activity.

References
Wells, P.N.T. The Scientific Basis of Medical Imaging. Edin., Churchill Livingston, 1982

SP430 Instrumental Science 4B

This subject will be offered from 1987

Lectures: 30 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Examination 60%
Assignments 40%

Microcomputer interfacing: A to D and D to A circuits, serial and parallel data transfers, special instrumentation busses.

The organisation and use of microcomputers in instrumentation.

SP456 Physics

This subject will be offered from 1987

Lectures: 39 hours in one semester
Laboratory: 21 hours in one semester
Assessment: Examination 75%
Laboratory reports 25%

Electromagnetic Radiation (8 hours)

Sources, detectors, properties of microwave, infra-red, visible, ultraviolet, and X radiation, with particular reference to chemical instrumentation applications.

Radiation Chemistry (8 hours)

Linear energy transfer, dosimetry, chemical effects resulting from the absorption of radiation, radiation chemistry of organic compounds.

Instrumentation (23 hours)

Fundamentals of DC and AC circuits, leading to bridge circuits, strain gauges, LVDTs, concepts of signal transfer and processing via filters, amplifiers, etc. Information storage and display. Behaviour of instrument systems. Performance criteria.

SP501 Experimental Techniques

This subject will be offered from 1989

Lectures: 20 hours in one semester
Laboratory: 10 hours in one semester

Tutorial:
Assessment: Assignments 100%

Earthing and shielding: reduction of noise and interference.

Electrical safety: Australian Standards for biomedical circuits.

Treatment of biophysical data: biological statistics and data presentation, use of small computers in biomedical practice, applications of mathematical models of physiological systems to experimental work, numerical methods in biophysics.

Nuclear studies: radiation safety, dosimetry, radiopharmaceuticals in clinical practice.

SP509 Physics 5

This subject will be offered from 1989

Lectures: 40 hours in one semester
Laboratory: 20 hours in one semester
Assessment: Examination 75%
Laboratory 25%

Solid state: Sommerfeld theory of electronic behaviour in crystals. Kronig-Penny model, band theory, PN junctions, 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 Instrumental Science 5A

This subject will be offered from 1989

Lectures: 30 hours in one semester
Laboratory: 20 hours in one semester
Assessment: Examination 80%
Assignments 20%

Using non-linear circuits in Instruments: applications and limitations.

Noise and stability in instruments: sources, causes, corrective techniques.

Optical instrumentation: selected case studies.

Transducers for common physical, chemical and biological quantities: accuracy, selectivity, sensitivity.

SP524 Biophysics 5A

This subject will be offered from 1989

Lectures: 36 hours in one semester
Laboratory: 24 hours in one semester

Tutorial:
Assessment: Examination 80%
Practical 20%

Cardiac monitoring and pathologies.

The ECG: genesis of myocardial field, lead systems, vectorcardiography.

ECG changes in disease, arrhythmias and conduction defects, pacemakers and defibrillators.

Monitoring pressure and flow Swan-Ganz catheters, ultrasonic and electromagnetic flowmeters, non-invasive techniques, cardiac output by dye and thermal dilution, electrical impedance method, phonocardiography.

Monitoring the birth process: maternal, foetal and neonatal monitoring.

Anaesthesia: agents and their administration; monitoring; physiological effects of anaesthesia, mathematical modelling.
SP525 Biophysics 5B
This subject will be offered from 1989
Lectures: 39 hours in one semester
Laboratory: 21 hours in one semester
Assessment: Examination 80% Practical 20%

Neuro anatomy: spinal cord organisation, histological features, brainstem, pathways, structures, hemispheres, subcortical systems, gross and histological dissection.
Receptor functions: information theory, channel capacity, information transmission, frequency coding, thresholds, receptive fields, generator potential
The chemical senses: smell, receptors, coding, pathways, taste, receptors, chemical interactions, pathways, comparison of olfaction and gustation.
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.

SP530 Instrumental Science 5B
Lectures: 30 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Examination 60% Assignments 40%

Advanced interfacing techniques and timing: DMA, multi-interrupt driven systems, serial and parallel processing.
Digital instrument system design: selected case studies.
Speech input and output with a computer.
An introduction to control theory.

SP531 Biophysical Systems and Techniques
Four hours per week for one semester
Continuous assessment by tests and assignments
An advanced subject of the graduate diploma course in biomedical instrumentation
Membrane biophysics: tracer dynamics. Applications of irreversible thermodynamics. Active and passive transport mechanisms.
References
Consult the lecturer in charge for additional references.

SP532 Clinical Monitoring Techniques
Four hours per week for one semester
Continuous assessment by tests and assignments
An advanced subject of the graduate diploma course in biomedical instrumentation.
Physical and physiological principles in the use and development of clinical monitoring systems. Areas include: cardiology, thoracic medicine, clinical neurophysiology, anaesthesiology, intensive care, maternity and neonatal care, kidney function, gastro-enterology, etc.
References

SP533 Aspects of Metabolic Measurement
Four hours per week for one semester
Assessment by assignment and tests
An advanced subject of the graduate diploma course in biomedical instrumentation.
Reference

SP534 Neurophysiological Techniques
Four hours per week for one semester
Assessment by assignments
An advanced subject of the graduate diploma course in biomedical instrumentation.
Preliminary reading
References
Consult the lecturer in charge

SP535 Project
Four hours per week for one semester
A compulsory subject of the graduate diploma course in biomedical instrumentation.
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 graduate diploma course in scientific instrumentation.
The design, construction and commissioning of a substantial component of an advanced scientific instrumentation system.

SP541 Signal Processing
Four hours per week for one semester
Assessment by assignments
A subject of the graduate diploma courses in biomedical Instrumentation and scientific instrumentation.
(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, auto-correlation, 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
References
Consult the lecturer in charge.
SP542 Optical Instrumentation
Four hours per week for one semester
Assessment by practical work, reports, assignments, examination
A subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation.
References
Consult the lecturer in charge

SP543 Vacuum Systems
Sixty hours in one semester

SP544 Nuclear Instrumentation
Sixty hours in one semester

SP545 Instrument Programming and Interfacing
Four hours per week for one semester
Assessment by practical work, reports, assignments, examination
A subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation. Interfacing peripheral devices. Programming and interfacing techniques for microprocessor peripheral support ICs — 1/Oports, gpoports, communications, graphics, direct memory access controller. Techniques for controlling instruments using standard bus modules.

SP546 Instrumentation Systems
Four hours per week for one semester
Assessment by practical work, reports and examination
A subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation. Data acquisition systems.
(a) Analog systems
Transducers, signal conditioning. Scanners, multiplexers, visual display devices, graphic recording. Magnetic tape storage.
(b) Digital systems
Analogue to digital and digital to analogue conversion, digital recorders.

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 graduate diploma courses in biomedical instrumentation and scientific instrumentation.

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 graduate diploma courses in biomedical instrumentation and scientific instrumentation.

References
Consult the lecturer in charge
SP553 Introduction Instrumentation Electronics
Four hours per week for one semester
Assessment by practical work, reports and examination
An introductory subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation.
DC circuits
Voltage, current, Ohm's law, power, resistances in series and parallel, Kirchhoff's laws, Thevenin's theorem, Norton's theorem, serials and parallel combinations of voltage and current sources, non-linear resistances.
AC circuits
Sine waves, AC power, capacitance, inductance, impedance, RLC circuits, tuned circuits, integrator and differentiator circuits, mutual inductance, transistors.
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 impedances.
(b) Transistor circuits
Small signal characteristics, gain, input impedance, output impedance, bias and current 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.
References

SP609 Physics 6
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Examination 80%
Laboratory 20%
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.
Ultrastronics.

SP610 Instrumental Science 6A
This subject will be offered from 1989
Lectures: 30 hours in one semester
Laboratory: 30 hours in one semester
Assessment: Examination 60%
Laboratory 40%
Advanced control theory.
Analogue instrumentation systems: selected case studies
Nuclear instrumentation: selected case studies.

SP624 Biophysics 6A
This subject will be offered from 1989
Lectures: 39 hours in one semester
Laboratory: 21 hours in one semester
Assessment: Examination 80%
Practical 20%
Biophysics of peripheral sensory systems: peripheral receptors, histology, function, CNS connections, spinal cord mechanisms, spinal afferent pathways — lemnisval and anterolateral, thalamic organization and projections, S1 and S11 somatosensory cortex, dysfunction, testing — SEP, pain, spinal and brainstorm 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.
Volume conductor theory: EEG origin, Poisson’s equation for homogenous isotropic volume conductor, solid angle theorem, EEG effects.
Medical imaging: ultrasound, nuclear methods, X-ray, CT scan, NMR (MRI), PET. Biological effects of radiation, microwave and electromagnetic effects.

SP625 Biophysics 6B
This subject will be offered from 1989
Lectures: 36 hours in one semester
Laboratory: 24 hours in one semester
Assessment: Examination 80%
Practical 20%
Vision: anatomy of the eye, optics of visual system, receptor function, central pathways, central processor, electrical recording of ERG, EOG, visual evoked response, intraocular pressure, recording, examination, pathology, assessment, adaptation, acuity, perimeter, spatial frequency.
Motor control: peripheral mechanisms, gamma loop, coactivation, stiffness regulation, servo mechanisms, motor cortex, motor potential, control circuits to basal ganglia and cerebellum, spinal pathways, pathology, skilled movement, learning, open and closed loop operation.
Speech: learning, mechanics, interpretation, injury
Higher cortical functions: EEG, neurometric analysis, P300, CNV, epilepsy, dementia, neuropharmacology, pathologies and investigative procedures.

Biological Control Systems
General systems theory, feedback, control theory, classification of feedback systems, elements of control theory, linear systems, state space representation, feedback, feedback networks.
Biological control systems: linear, non-linear, and adaptive systems.
Neurophysiology:
Vision: anatomy of the eye, optics of visual system, receptor function, central pathways, central processor, electrical recording of ERG, EOG, visual evoked response, intraocular pressure, recording, examination, pathology, assessment, adaptation, acuity, perimeter, spatial frequency.
Motor control: peripheral mechanisms, gamma loop, coactivation, stiffness regulation, servo mechanisms, motor cortex, motor potential, control circuits to basal ganglia and cerebellum, spinal pathways, pathology, skilled movement, learning, open and closed loop operation.
Speech: learning, mechanics, interpretation, injury
Higher cortical functions: EEG, neurometric analysis, P300, CNV, epilepsy, dementia, neuropharmacology, pathologies and investigative procedures.
SP626 Applied Neurosciences
This subject will be offered from 1989
Lectures: 30 hours in one semester
Laboratory: 
Assessment: Practical work
Assignment
Examination
Learning theory, memory, sleep and consciousness. Disorders of higher cortical functions.

SP630 Instrument Science 6B
This subject will be offered from 1989
Lectures: 30 hours in one semester
Laboratory: 
Assessment: Examination
Assignments
Laboratory
Advanced digital systems: algorithmic state machines, special purpose signal processing devices.
Chemical instrumentation: selected case studies.
Optical instrumentation: selected case studies.

AT191 Health and Society
Two hours per week for one semester
Assessment is continuous
A first-year subject in the diploma course in applied science (environmental health).
Psychological principles in human behaviour are examined, covering such areas as: genetic determinism in behaviour; learning principles applied to human behaviour; communication processes and the practical application of these in one-to-one communication; and role development and how society reinforces different role patterns in people of different ages, backgrounds and sexes.
Textbook

AT192 Health and Society
Two hours per week for one semester
Assessment is continuous
A first-year subject in the diploma course in applied science (environmental health).
Emphasis in this course will be on topics in psychology such as: motivation, adjustment, personality and social behaviour.
Attention will also be given to coping with environmental stress and anxiety.
Textbook

AT200 Applied Psychology
This subject will be offered from 1986
Lectures and workshops: 30 hours
Assessment: Class presentations 40%
(15% + 25%)
Participation in 30%
Class exercises 30%
Written presentation 30%
The emphasis in this course will be on interpersonal communication1 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.
References
To be advised by the lecturer at the beginning of the course.

AT291 Complementary Studies
Two hours per week for one semester
Assessment is continuous
A second-year subject in all degree courses in applied science.
This course has two objectives. The first is to train students in business communications and report writing. The latter will give students experience in literature searching, constructing a bibliography and conducting an investigation leading to the preparation of a report. The second objective is to expand students' understanding of Australian society.
Current social issues — such as unemployment, immigration and automation — will be examined against a background of information and theory concerning the functions of our social, economic and political systems, as a means of developing communication skills.
References
Consult the lecturer in charge

AT299 Complementary Studies
This subject will be offered from 1986
Lecture/Discussion: 30 hours in one semester
Assessment:
Lecture/Discussion: Students are required to present one class paper in both oral and written form; a second paper will be required in written form only. Video material will be shown when appropriate.
Alternatively, each student will submit three brief reports —
(1) on the chosen topic;
(2) on another class discussion; and
(3) on an excursion or visit.
This course has two aims.
The first is to introduce students to report writing; students will gain experience in literature searching, constructing a bibliography and conducting an investigation leading to the preparation of a report.
The second aim is to expand students' understanding of Australian social context. Current social issues — such as crime, unemployment, immigration, automation and conservation — will be examined against a background of information and theory concerning the functions of our social economic and political systems, as a means of developing communication skills.
Topics include contemporary Australian social issues (e.g. poverty, migration, racism, electoral behaviour) and issues relating to the broader social context of science (e.g. the nuclear issue, conservation, automation, genetic engineering).
References
Additional references will be given during the course.

AT300 Behavioural Studies
This subject will be offered from 1987
Lectures and workshops: 30 hours
Assessment:
Examination 60%
The course examines Australian society from the point of view of the self, the primary group, the formal organisation and the institution. It uses SOCIOCOLICAL 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.
Sociological concepts important to this program include social stratification, power and authority, minorities, primary groups, secondary groups, communications, and race relations.
Psychological concepts include the study of personality, child development, defence mechanisms, perception, biological bases of behaviour, personal interaction and conflict and consenius.
These concepts provide the theoretical basis for an understanding of the practical processes involved in industrial negotiations including negotiation, conciliation, handling conflict and hostility at an organisational level, etc.
References
To be advised by the lecturer at the beginning of the course.
AT393 Communication Studies
One hour per week for one semester
A third-year subject for degree students majoring in applied chemistry. Training in the presentation of oral reports. Each student is expected to present two oral reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.

AT394 Report Writing
One hour per week for one semester
Assessment is continuous
A third-year subject for degree students majoring in biochemistry. Training in the presentation of oral reports. Each student is expected to present two reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation and participation is required for a pass in this subject.

AT493 Brain and Behaviour
Four hours per week for one semester
Assessment is continuous through short tests and an assignment
A final-year subject in the degree course in applied science for students majoring in biophysics.
The course provides an introduction to areas of human behaviour which are outside of, but complementary to, the study of biochemistry. The topics range over such areas as neuroanatomy, learning theory, memory, stress, and social theories of abnormal behaviour. The practical aspects of the course are emphasised by using lecturers from a range of academic disciplines and professional practice. Students are also introduced to some behavioural and communication skills which should be of benefit both in their private and professional lives.

AT500 Communication Skills
This subject will be offered from 1989
Lectures and workshops: 30 hours
Assessment: Class exercises 30%
Major report 30%
Oral presentation 20%
Participation 20%
The course builds on an earlier study of both psychology and communication skills using students' own experiences of Work Experience in Semesters 5 and 6. The communication component will consist of: defining scope, level and complexity of required reports; researching and summarising material including selection of material from interviews; organising, simplifying and elaborating for specific readers; improvement of standard pro forma reports; presenting effective oral reports; use of visual aids both for written reports and for oral presentations
The psychological component will consist of: an attempt at analysis of own behaviour patterns during work experience; an introductory knowledge of psychoanalytic, behaviouristic, humanistic and transpersonal concepts; study of role patterns; male/female and group dynamics; sources of interpersonal conflict in the workplace.

AT596 Brain and Behaviour
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Assignment
Examination
A study of the philosophical and ethical implications of advances in the neurosciences.
Topics will include: biological and environmental determinants of the human behaviour and the mind-brain problem in the neurosciences

AT699 Communication Studies
This subject will be offered from 1989
Lecture/Discussion combined with practical activities:
15 hours in one semester
Assessment: Based on two major oral presentations
This subject aims to provide 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, pace, 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 comprehensible

BC210 Building Practices
Thirty-six hours in one semester
A second-year subject in the diploma course in applied science (environmental health).
Building construction in relation to health surveying is studied and building sites are visited. Uniform building regulations are covered, fire engineering is examined, and basic plumbing is taught.

BC301 Building Construction(1)
This subject will be offered from 1987
Lectures/demonstrations: 30 hours
Assessment: Test and assignments
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.
This 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.

BC401 Building Construction(2)
This subject will be offered from 1987
Lectures/demonstrations: 30 hours
Assessment: Tests and/or assignments
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.

BS114 Business Studies
Five hours per week for one semester
A first-year subject for degree students majoring in mathematics and computer science and an optional subject in some other degree courses.
The course objectives are:
(i) to provide students with an appreciation of economics and accounting;
(ii) to enable the student to communicate with executive business staff;
(iii) to understand some of the concepts behind many business decisions; and
(iv) to appreciate the link between economics/accounting and the management decision process.

References
March, W. Accounting By-Laws. State Government Printer
Victorian Building Regulations. State Government Printer

References
MABW Sanitary Plumbing By-Laws. State Government Printer

References
MABW Sanitary Plumbing By-Laws. State Government Printer

References
MMBW Sanitary Plumbing By-Laws. State Government Printer

References
Victorian Timber Frame Manual. Timber Promotions Council, P.O. Box 168, Victoria, 3130
Among the topics to be considered in the economics component are markets and resource allocation, demand analysis and forecasting, production and cost relationships in the short and long run, an introduction to profit maximisation and pricing decisions.

Accounting textbook
Swinburne Institute of Technology and Royal Melbourne Institute of Technology. Introductory Accounting and Finance for Management. 1984

Accounting references
Barton, A.D. The Anatomy of Accounting. 3rd edn, St Lucia, University of Queensland Press, 1984
McDonald, R.C., Cooper, R.G. and Astill, B.J. Accounting for the Non-Finance Executive. N.Z., Longman Paul Ltd, 1983

Economics textbook

Economics references
Heyne, P. The Economic Way of Thinking. 3rd edn, Chicago, SRA, 1980
Davies, J. and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1979
Heyne, P. The Economic Way of Thinking, 3rd edn, Chicago, SRA, 1980

BS115 Business Studies

Four hours per week for one semester

Prerequisite: BS114 Business Studies

A second-semestersubject for degree students majoring in mathematics and computer science.

The course objectives are:
(i) to provide students with an appreciation of economics and accounting;
(ii) to enable students to communicate with executive business staff;
(iii) to understand some of the concepts behind many business decisions; and
(iv) to appreciate the link between economics and accounting and the management decision process.

Topics covered in the accounting section include: the cost and management accounting process, product costing methods, standard costing, the preparation and use of budgets, capital expenditure analysis, and decision-making.

Topics covered in the economics include: firms’ objectives and pricing strategies, investment analysis, industry economics, the structure of Australian industry and the role of industry assistance.

Accounting textbook
Swinburne Institute of Technology and Royal Melbourne Institute of Technology. Introductory Accounting and Finance for Management. 1984

Accounting references
McDonald, R.C., Cooper, R.G. and Astill, B.J. Accounting for the Non-Finance Executive. N.Z., Longman Paul Ltd, 1983

Economics textbook

Economics references
Heyne, P. The Economic Way of Thinking, 3rd edn, Chicago, SRA, 1980
Heyne, P. The Economic Way of Thinking, 3rd edn, Chicago, SRA, 1980

BS141 Introductory Law

This subject will be offered from 1986

Lectures: 30 hours
Tutorials: 15 hours
Assessment: Tutorial Papers 20%, Essay/Assignment 20%, Examination 60%

Sources of law, problems with the law, the three tiers of Australian Government: Commonwealth, State, Local Government. The Parliamentary Process. Constitutional constraints affecting environmental and public health legislation.

Delegated legislation:
(a) relevance to health surveys.
(b) advantages and disadvantages.
(c) reviewing through Parliament and the courts.

The Australian court system, court personnel and tribunals with specialised jurisdictions. The civil and criminal trial process.

Judges as a source of law — precedent and legal reasoning. Case studies of particular relevance will be examined: negligence (consumer protection); nuisance (environmental controls); strict liability (hazardous materials); and negligence in the exercise of statutory powers and duties (building controls).

Judges as a source of law — the main judicial approaches to statutory interpretation (plain meaning or policy), the context of words in a statute, the audience, the purpose. Particular rules; meanings limited to class or association, gaps in a statute, inconsistent provisions, conflicts with property rights, penal provisions.

Confronting problems caused by legal concepts: legal personality (prosecuting the corporate defendant — are the criminal sanctions appropriate?); property (environmental and planning controls); natural justice (challenging administrative decisions). Changing the law (involvement by health surveyors in changes to building controls, role and structure of Local Government, food laws).

References
To be advised by the lecturer at the beginning of the course

BS192 Introductory Law

Two hours per week for one semester

A first-year subject in the diploma course in applied science (environmental health).

An introduction to the Australian legal system and to basic concepts of law. The sources of law, the main branches of law, the administration and enforcement of the law, the doctrine of precedent. The role of the common law in protection of health and the environment.

The application of techniques of statutory interpretation to legislation affecting the environment, e.g. Litter Act 1964, Navigable Water (Oil Pollution) Act 1960.

BS253 Law: Environment Protection, Health and Food Laws

This subject will be offered from 1987

Lectures: 30 hours
Tutorials: 30 hours
Assessment: Assignment 20%, Short Test 30%, Final Examination 50%

Legislation relevant to the health surveyor in Local Government: the Health Act, enabling legal provisions, e.g. nuisance, sanitary, infectious disease, by-laws.

Building controls and special dangerous trades to be considered with reference to the Health Act, the Town and Country Planning Act, the Building Control Act and the Environment Protection Act.

The Food Act — controls on food premises, preparation and sale of food, e.g. 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.

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.
Environment Protection Authority (and agencies). Consideration of the Environment Protection Act, State Environment Protection policies and regulations thereunder.

References
Environment Protection Act.
Additional references will be provided.

**BS254 Law: Procedure and Evidence**
This subject will be offered from 1987

- Lectures: 30 hours
- Tutorials and Mock Trial: 30 hours
- Workshops: 30 hours
- Assessment:
  - Mock Trial Workshop: 20%
  - Test on Procedure: 30%
  - Test on Evidence: 50%

The legal process of prosecution — choosing the appropriate court, who may prosecute the rule against ambiguous allegations, what must be specified in the information and summons, rules with respect to service and proof of same. Time limits. Amendments. Adjournment. Trial procedures — pleas, powers of the court.

Particular problems with respect to the corporate defendant, sampling and entry powers will be considered in the context of the mock trials which will commence from the initial interview of a complainant.

The rules of evidence: statutory and judicial developments, the burden and standards of proof, hearsay, documents, admissions, improperly obtained evidence, competent and compellable witnesses, expert witnesses, judicial notice and other relevant evidentiary issues will be considered.

References
Evidence Act
Materials on evidence
Materials on practice and procedure

**BS293 Law**
Three hours per week for one semester

Prerequisite, BS192 Introductory Law

A second-year subject in the diploma course in applied science (environmental health).

An introduction to:
- (a) legal procedures in the investigation of summary offences;
- (b) corporate personality and the investigator;

**BS390 Law**
Sixty-three hours in one semester

Prerequisite, BS293 Law

A third-year subject in the diploma course in applied science (environmental health).

An analysis of the rules of procedure and requirements for legal processes prior to the court hearing.

A detailed examination of the rules of professional conduct and ethics in the context of the Magistrates Court.


**BS428 Administration and Management**
This subject will be offered from 1989

- Lectures: 30 hours
- Assessment: Examination/assignment 100%

Introduction to management techniques used in Local Government. Study of the health surveyor's role within the structural framework of the Council organisation.


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.

References
To be advised by the lecturer at the beginning of the course.

**BS447 Administrative Law**
This subject will be offered from 1989

- Lectures: 15 hours
- Tutorials: 15 hours
- Assessment: Assignments/Examinations 100%

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 Administrative Law Act and review by the Courts 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.

References
To be advised by the lecturer at the beginning of the course.

**BS448 Law, Science, Technology & Social Change**
This subject will be offered from 1989

- Lectures: 30 hours
- Assessment: Class Papers Research Papers 100%

After instruction in undertaking legal research, students will be required to present prepared class papers on particular issues related to various themes.

- (1) the impact of science and technology on legislative controls: air pollution, noise control, food (production/additives).
- (2) the impact of economic and social change on legislative controls: land use, accommodation, occupational health and safety.
- (3) difficulties for enforcing authorities (government policies and administration): conciliation or prosecution; duplicity of control; jurisdictional boundaries (if appropriate).
- (4) the philosophy of punishment (when/when not to prosecute, assessing the impact and effectiveness of prosecutions).

Legislative changes and implications of judicial decisions reported since work experience was undertaken will be considered.

In addition, students must complete a research paper in which they will be required to:
- either (1) critically counterpose Victorian or Australian legal controls with other jurisdictions,
- (2) consider different legislative approaches, objectives and administrative controls (e.g. the variety of controls and associated consumer protection and marketing legislation) with respect to food.

Research topics must be approved by the course convenor and may be developed from any aspect of legal study throughout the course.

References
To be advised by the lecturer at the beginning of the course.

**BS495 Business Studies**
Four hours per week for one semester

A final-year complementary study for degree students.

This subject develops and integrates concepts and principles from various fields of economics, accounting and business administration, where they assist management decision-making and policy formulation within the firm.

A more detailed statement of the subject material, and references, is provided by the lecturers.

**BS497 Office Systems and Administration**
One hour per week for one semester

A final-year subject in the diploma course in applied science (environmental health)

A study of office procedures and administrative principles applicable to municipal and other public bodies. Particular attention is given to record-keeping and its relevance to evidence for prosecutions.
**BS499  Law**

Sixty-three hours in one semester

Prerequisite: BS390Law

A final-year subject in the diploma course in applied science (environmental health).

A detailed examination of relevant areas of the law of evidence and problems of proof. Practical work will include a mock trial, commencing from the initial investigation through to a ‘court hearing’ in which both evidentiary problems and the interpretation of legislation (previously studied) will be addressed.

Constraints upon administrative action, judicial review and natural justice are to be examined.

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**BS510  Business Studies**

This subject will be offered from 1989

Lectures: 75 hours in one semester

Assessment: Tests 20%

Assignments 20%

Examination 60%

**Accounting**

The business environment; financial statements (balance sheet and profit/loss); analysis and interpretation; cash management/cash budgeting; cost accounting; finance decisions; taxation.

**Economics**

Markets and efficient resource allocation; demand analysis; production and cost analysis; an introduction to profit and pricing.

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**BS511  Business Studies**

This subject will be offered from 1989

Lectures: 75 hours in one semester

Assessment: Tests 80%

Assignment 20%

**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.

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**BS512  Business Studies**

This subject will be offered from 1989

Lectures: 60 hours in one semester

Assessment: Tests 70%

Assignment 30%

**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; features and challenges.

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**BS515  Business Studies**

This subject will be offered from 1989

Lectures: 60 hours in one semester

Assessment: By assignment, tests and examination

This subject develops and integrates concepts and principles from various fields of economics, accounting and business administration, where they assist management decision-making and policy formulation within the firm.

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**BS517  Business Studies**

This subject will be offered from 1989

Lectures: 30 hours in one semester

Assessment: Tests 50%

Assignments 50%

Financial statement analysis; working capital management; sources of finance; leasing; concepts of valuation; financial structures; concepts of valuation; dividend policy; business combinations; financial forecasting and planning.

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**CE223  Town and Country Planning**

Two hours per week for one semester

A second-year subject in the diploma course in applied science (environmental health).

An introduction to town-planning techniques, Victorian planning structure and legislation, map techniques, the preparation of planning data, regional concepts, neighbourhood planning. The practical tutorial work includes visits to new development sites within the metropolitan area and an introduction to the preparation of planning reports.

**References**

To be advised by the lecturer.

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**CE235  Health Engineering**

Three hours per week for one semester

A second-year subject in the diploma course in applied science (environmental health).

This subject gives the student a basic knowledge of fluid mechanics, and a practical understanding of urban drainage and sewerage systems.

**Hydrology**


**Hydraulics**

Bemoulli’s equation, continuity of mass, energy forms, application to simple examples; chutes, Pitot tube, orifices, weirs.

**Drainage**

Pipes — capacity, location, installation, grades, sizes, materials. Pipe flow formulae, use of charts for pipe selection. Introduction to drainage system design. Open drains — Manning’s formula.

**Sewerage**


**References**

To be advised by lecturer.

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**CE236  Health Engineering**

This subject will be offered from 1987

Lectures: 37.5 hours

Assessment: Class tests 70%

Submitted/tutorial work 20%

Laboratory work 10%

**Hydrology**

The hydrologic cycle; the runoff process. Rainfall intensity — frequency — duration charts. Rational method of determination of flood flows.

**Hydraulics**

Hydrostatic pressures and thrusts on plane immersed surfaces. Bernoulli equation with application to simple orifice and weir problems. Introduction to pipe and channel flow.

**Stormwater drainage**

Catchment runoff (rational method). Sizing of pipes and channels. Grading, laying and bedding of drains.

**Sewerage treatment**

Treatment processes; municipal plants; package plants; land treatment.

**References**


**CE401  Health Engineering**

Three hours per week for one semester

A final-year subject in the diploma course in applied science (environmental health).

**Water supply**

Soil mechanics
Introduction, soil properties, classification systems, laboratory and field identification and classification.
Groundwater flow, total head concepts in steady flow, Darcy's law, soil permeability, isotropic flow-nets, examples of steady two-dimensional seepage.
Solid waste disposal
Volumes and composition of solid wastes from domestic, commercial and industrial sources; collection, transport and disposal methods; sanitary landfill, incineration.
Stream pollution
Sources and nature of polluting substances, effect on bodies of natural water, oxygen balance, Streeter-Phelps' equation.
Surveying
Introduction to levelling, measuring and setting out. Basic computation techniques. Surveying instruments, uses and adjustments. Practical classes showing application of instruments.

References
To be advised by the lecturer.

CE423 Town & Country Planning
This subject will be offered from 1989
Lectures: 30 hours
Assessment: Examination/assignment 100%
Introduction to the history of planning; purpose and function of planning in relation to the health, safety, and welfare of the community; residential planning. Planning in old and new neighbourhoods. Traffic management in residential areas, introduction to planning. Land waste management in relation to health surveying.

References
Douglas, J. The Urban Environment. Arnold
Keeble, Principles and Practice of Town and Country Planning. Estates Gazette

CE436 Health Engineering
This subject will be offered from 1989
Lectures and laboratory work: 60 hours
Assessment: Three tests and assignments 100%
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.

References
To be advised by the lecturer at the beginning of the course.

EA223 Industrial Chemical Processes
Three hours per week for one semester
Prerequisite, EA222
Assessment by assignments
A second-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) description of chemical engineering unit operations: size reduction, mixing; dust and solids removal by sedimentation, filtration, cyclone separators, electrostatic precipitators, dust washers and venturi scrubbers;
(b) examples of the applications of these operations in the process industries, such as in food preservation by drying, freezing, etc. will be included; and
(c) an introduction to process calculations, including stoichiometry, combustion calculations, heat and mass balances.

EA321 Industrial Processes
Three hours per week for one semester
Prerequisite, EA223
Assessment by assignments
A third-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) descriptions of major industries and their environmental problems, using the techniques of flowsheeting and process calculation developed in EA122 and EA223;
(b) water and waste water treatment, including techniques of chemical treatments, ion exchange, sedimentation, coagulation, etc., biological processes such as activated sludge and trickling filters, etc.; water cooling, humidification and dehumidification, odour control; and
(c) a program of works visits designed to augment the above studies.

EA421 Industrial Processes
Four hours per week for one semester
Prerequisite, EA321
Assessment by assignments
A final-year subject in the diploma course in applied science (environmental health).
The subject comprises:
(a) case studies of industrial problems involving by-products and waste flows;
(b) discussion of relevant environmental problems of current public interest;
(c) industrial safety and hygiene in chemical plants;
(d) occupational safety, health and hygiene; factors influencing behaviour and safety in the work place; and
(e) a program of works visits designed to augment the above studies.

References

ED101 Engineering Drawing and Sketching
Three hours per week for one semester
Assessment by assignments
A first-year subject in the diploma course in applied science (environmental health).
The course gives the student a sound basic knowledge of the principles of engineering drawing and sketching. Exercises are selected from the areas of interest to health surveyors and may include equipment and plans for heating, ventilation, lighting, air-conditioning, refrigeration, fire protection, drainage, waste treatment and disposal, building construction, pumps, pipework, etc.

ED102 Engineering Drawing and Sketching
Three hours per week for one semester
Prerequisite, ED101
Assessment by assignments
A first-year subject in the diploma course in applied science (environmental health).
A continuation and extension of the topics of ED101.
**EE541 Control Systems**
Four hours per week for one semester
A subject of the graduate diploma course in biomedical instrumentation and scientific instrumentation.

Review of linear feedback, Control theory, Introduction to non-linear system analysis, Analogue computer simulation of systems, introduction to the state variable approach to system simulation and state space analysis. Discrete data systems and sampling theory, Introduction to digital control techniques.

**References**

**EE542 Applications of Computer Devices**
Four hours per week for one semester
A subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation.
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 MCS88 architecture and applications. Instruction set and peripheral chip functions.
Data transmission methods: CCITT V24, RS232, IEEE 488 general purpose interface bus.
Computer peripherals: graphic output techniques, intelligent peripherals, bulk storage.
PDPl minicomputer: PDP11 architecture and instruction set. PDP11 data acquisition example.

**References**

**EE543 Data Transmission for Instrumentation**
Four hours per week for one semester
A subject of the graduate diploma courses in biomedical instrumentation and scientific instrumentation.

Modems, modulation methods, interfacing, line-conditioning, multiplexers and concentrators, switched and leased lines, DTI, Datel, and scientific instrumentation.

**References**

**EE544 Occupational Engineering**
This subject will be offered from 1989
Lectures: 48 hours
Laboratory: 6 hours
Assessment: 3 hour examination 50%, Study in depth 30%, Laboratory/assignments 20%

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.

**References**
Diffrient, et al. Humanscale, 1, 2, 3, 4, 5, 6, 7, 8, 9. Mass., MIT Press, 1974-81
ME449  Environmental Engineering
Three hours per week for one semester
This is the final-year subject in the diploma course in environmental health.
The objective of the course is to develop an appreciation of the influence that engineering changes to the working environment can have on health. Graduates develop the skills necessary to evaluate working environments with respect to the safety and well-being of occupiers of those environments.
The syllabus then will include a systematic approach to problems of mismatching between human characteristics and environment and task demands. Particular attention will be given to anthropometry, heat, light, noise, vibration, displays, controls, questionnaires and interview techniques and occupational health and safety programs.
The course involves 54 hours of classroom and laboratory attendance.

References
Grandjean, E. Fitting the Task to the Man. Lond., Taylor and Francis, 1982
McCormick, E.J. and Sanders, M.S. Human Factors in Engineering and Design. 5th edn, N.Y., McGraw-Hill, 1982

MP107  Engineering Drawing & Sketching
This subject will be offered from 1986
Lectures and practical drawing: 30 hours
Classes generally conducted as short lecture followed by drawing office work
Assessment: Assignments 100%

Drawing exercises to develop and use skills to illustrate typical details of equipment, plant and structures.

References
To be advised by the lecturer at the beginning of the course.

MP207  Engineering Drawing & Sketching
This subject will be offered from 1986
Lectures and practical drawing: 30 hours
Classes generally conducted as short lecture followed by drawing office work
Assessment: Assignments 80%
Test 20%

Topics selected from the following:
Layout drawings involving pipework, drains, exhaust canopies, ductwork, etc.
General arrangement drawings, plant layouts.
Industrial stairways and ladders.
Pipe identification, coding.
Filters, waste disposal equipment and structures.
Pumps, valves.
Drawing exercises illustrating typical installations and requirements.

References
To be advised by the lecturer at the beginning of the course.

MP517  Industrial Processes and Pollution Control
This subject will be offered from 1989
Lectures and work visits: 60 hours
Assessment: Examination 85%
Visit reports 15%

Use of process flow diagram.
Simple process calculations (stoichiometry, combustion, heat and mass balances)
Disposal and dispersal of effluents, stack heights, etc.
Description of major industries and their problems (aluminum industry, electroplating, etc.).
Major environmental issues of general concern (acid rain, atomic power, PCBs, dioxin, dumping of toxic waste).

References
Fielder & Rousseau. Elementary Principles of Chemical Processes. Wiley & Sons
The Global 2000 Report to the President of the U.S. Vol 1, G.O. Barney, Study Director, Pergamon Press

XX XXX Complementary Studies (A) (Science and Society)
This subject will be offered from 1989
Lecture/Discussion: 30 hours in one semester
Assessment: Written presentation 45%
Oral presentation 35%
Class activities 20%

This subject aims:
(i) to encourage students to reflect upon the nature of scientific activity and its relations to social, psychological and political processes;
(ii) to acquaint students with the range of methodologies appropriate to social analysis and to problem-solving in the area of science, technology and society.

The contrasting methodologies of the natural and the human sciences; the role of models and metaphors in each. Attempts at a 'science' of human nature.
The psychology of science: What is distinctive about scientific ways of thinking and perceiving reality? Convergent and divergent thinking; institutions and the formation of personality.
The social relations of science: elitism, professionalism and democratisation in science; science, language and cultural context.
Science and political processes; knowledge Institutions; science and gender.

XX XXX Complementary Studies (B) (Science and Ethics)
This subject will be offered from 1989
Lecture/Discussion: 30 hours in one semester
Assessment: Written presentation 45%
Oral presentation 35%
Class activities 20%

This subject aims:
(i) to develop in students a critical awareness of the nature and assumptions of ethical arguments and their application to scientific practice;
(ii) to equip students with skills to identify and evaluate the value-systems which underlie social institutions;
(iii) to explore the relationships between morality, law and politics as they affect the scientist.

What is the nature of ethical arguments? How do they differ from scientific arguments? Concepts of evidence and proof; relativism and objectivity.
Detecting ethical assumptions in scientific decision-making. Ethical methodologies: utilitarianism; individual worth ethics; ecological and humanistic approaches. What does morality have to do with scientific arguments? Concepts of evidence and proof; relativism and objectivity.

(a) science policy?
(b) routine scientific problem-solving?

XX XXX Complementary Studies (C)  
(Computers and the Law)
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Tests 50%  
Assignment 50%

Introduction to the legal system, highlighting its origins, present institutional structure and techniques of the reasoning employed; law of contract, tort, business entities, trade practices and taxation; present capacity of the law to meet the computer technology.

XX XXX Complementary Studies (D)  
(Industrial Relations — Human Management)
This subject will be offered from 1989
Lectures: 30 hours in one semester
Assessment: Tests 50%  
Assignments 50%

Nature of human resources; effective management; organisation, individuals, groups; organisational design; managerial task. Nature of industrial relations and conflict, parties to industrial relations; conflict resolution procedures.
Art

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Art courses offered ...................................... AR2
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Faculty of Art

Dean
I. McNeilage, DipArt(CIT), TTTC

Academic Staff

Department of Film and Television

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Senior Lecturers
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C. McGill

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A.M. Evans, DipAgricExt(Melb)
P. Tammer, BA(Melb)

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N. Ghazarian, GradDipArt(AppF&TV)(SIT)

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Principal Lecturer
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H. Lueckenhausen, GradDip(Industrial Design)(RMIT), DipEd
W. G. Thomas, DipArt(RMIT), BEd(LaT)

Principal Tutor
P. Gajree, DipEd, FIIP

Senior Tutor/Demonstrator
R.A. Newbound, CertPrint

Art courses offered

Full-time courses in the Faculty of Art are offered as follows:

Department of Film and Television

Diploma of Art (Film and Television)
Graduate Diploma in Applied Film and Television

Department of Graphic Design

Diploma of Art (Graphic Design)
Degree of 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.

The form of the examination and the content of the project work (assigned projects) will be determined by the panel of examiners and moderators appointed by the Art Faculty Board.

General conditions

Swinburne reserves the right to retain any work executed by students as part of their course studies. Work not required may be claimed by the student after it has been assessed.

The Art Faculty Board is the final authority for deciding passes or failures in any of the examinations for the Faculty of Art.
Diploma of Art (Film and Television)
3 years full-time

The objective in this course is to provide professional training for people wishing to make a career in the film and television industries of this country. The course aims to foster craft and conceptual skills allied to script writing, directing, producing, editing, sound recording, lighting and camera operating.

Entrance requirements
There are no prerequisite subjects.

VSE Year 12: Recommended Group 1 subject: English
All Group 2 subjects will be considered.

Tertiary Orientation Program: All students who have successfully completed a TOP course will be considered.

Applicants who have reached the age of 23 or who have been out of secondary school for five years or more should apply direct to Swinburne.

Applications for second and higher years must be made direct to Swinburne.

Applicants are initially required to undertake aptitude 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.

An interview is required.

Following the assessment of the aptitude tests, selected applicants 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 in 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 Universities Admissions Committee publication, Guide for Prospective Students. This is published in September, and distributed to all secondary schools, or is available on application to the Victorian Universities Admissions Committee, 40 Park Street, South Melbourne 3205, telephone 690 7977. Please refer to 'Application procedure', in the general section of this handbook.

All overseas applicants, including Australian citizens, must be in Australia on the date the applications close, in order to participate in selection tests and interviews.

Course structure

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</table>

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’).

Graduate Diploma in Applied 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 a practical course in film, video, or animation production, for applied commercial, industrial or educational purposes.
(2) To promote the objective use of these media in order to communicate information to defined audiences.

Note: The course serves areas such as communications media, education (including re-training), public relations, advertising, social welfare and audio-visual services.

Eligibility
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

<table>
<thead>
<tr>
<th>Genre</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>12</td>
</tr>
<tr>
<td>Film</td>
<td>6</td>
</tr>
<tr>
<td>Animation</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
</tr>
</tbody>
</table>

In the three areas of specialisation offered, it is not possible to transfer from one stream to another.

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Semester</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF450</td>
<td>Assigned Projects (2 semesters)</td>
<td></td>
<td>340</td>
</tr>
<tr>
<td>RF470</td>
<td>*Result of Studies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Resources
Swinburne provides all usual equipment and meets production costs. Budget expenditure is determined by the individual student within predetermined limits.

Closed circuit colour television, 16mm film and animation equipment are provided.

Application forms
These are available from the Secretary, Faculty of Art, and must be returned by the date specified thereon. Telephone 819 8124.
**Diploma of Art (Graphic Design)**

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 and publication design.

**Entrance requirements**

There are no prerequisite subjects.

VISE Year 12: Recommended Group 1 subjects: Art, Graphic Communication, English.

Group 2 subjects: All Group 2 subjects will be considered.

Tertiary Orientation Program: All students who have successfully completed a TOP course will be considered.

No preference is given to either the satisfactory completion of VISE Year 12 or TOP as a prerequisite qualification.

NB. Course Selection Officers have noted that an increasing number of applicants are undertaking TOP Art Studies after completing VISE Year 12. This course of action may enhance chances of entry into the course, but should not be considered a necessary prerequisite qualification.

An interview is required.

At interview applicants are required to:

1. Present examples of their art-work
2. Demonstrate an awareness of the contents and requirements of the course and future employment opportunities.

Selection tests and interviews are conducted in 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 Universities Admissions Committee publication, Guide for Prospective Students. This is published in September, and distributed to all secondary schools, or is available on application to the Victorian Universities Admissions Committee, 40 Park Street, South Melbourne 3205, telephone 690 7977.

Please refer to 'Application procedure', in the general section of this Handbook.

Applications for second year and higher must be made direct to Swinburne and not through VUAC.

Mature-age applicants, i.e. applicants who have reached the age of 23 or who have been out of secondary school five or more years, apply directly to Swinburne Institute of Technology.

All overseas applicants, including Australian citizens, must be in Australia on the date the applications close, in order to participate in selection tests and interviews.

**Course structure**

<table>
<thead>
<tr>
<th>First year</th>
<th>Second year</th>
<th>Semester hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RG101 Assigned Projects 1</td>
<td>RG201 Assigned Projects 2</td>
<td>340</td>
</tr>
<tr>
<td>RG111 History of Arts 1</td>
<td>RG211 History of Arts 2</td>
<td>34</td>
</tr>
<tr>
<td>AT193 Applied Writing</td>
<td>AT290 Psychology</td>
<td>34</td>
</tr>
<tr>
<td>AT252 Theory of Communications</td>
<td>AT252 Theory of Communications</td>
<td>34</td>
</tr>
<tr>
<td>TS153 Typewriter Keyboard Training</td>
<td>RG240 *Result of Studies 2</td>
<td></td>
</tr>
<tr>
<td>RG140 *Result of Studies 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Third year**

- RG301 Assigned Projects 3: 340
- RG320 Methods of Production 3: 34
- AT391 Applied Psychology: 34
- RG340 *Result of Studies 3

**Bachelor of Arts (Graphic Design)**

4 years cooperative

The aim of the degree course is to meet the present and future needs of industry, and to train people with a high degree of creative ability for positions of administrative responsibility in the areas of direction and production of printing, publishing, advertising, educational 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, Business Administration and Communication Theory subjects are studied at Swinburne.

Diploma students who achieve a credit pass are eligible to apply for degree conversion.

**Course structure**

**First and second year**

(common to both diploma and degree)

<table>
<thead>
<tr>
<th>Third year</th>
<th>Fourth year conversion diploma/degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT391 Applied Psychology</td>
<td>RG410 Assigned Projects 4</td>
</tr>
<tr>
<td>RG321 Print Technology</td>
<td>BS492 Business Administration</td>
</tr>
<tr>
<td>RG313 Industrial Year</td>
<td>RG441 *Result of Studies</td>
</tr>
<tr>
<td>RG341 *Result of Studies</td>
<td>RG410 Assigned Projects 4 (Professional)</td>
</tr>
</tbody>
</table>

Subjects to be taken by part-time study.

**Fourth year**

(full-time at the Institute)

- RG410 Assigned Projects 4: 306
- BS492 Business Administration: 51
- RG441 *Result of Studies

**Fourth year conversion diploma/degree**

- RG410 Assigned Projects 4 (Professional): 306
- BS492 Business Administration: 51
- RG441 *Result of Studies

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

Conversion degree

Cooperative degree

4th year

Diploma

3rd year

HSC or equivalent entry requirement

1st year

Industry

Professional practice

Distinction between diploma and degree courses

The diploma stream is for a student with specific abilities, i.e. as an extension of working in specific areas 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

Foote, Cone and Belding Scholarships
Two scholarships are available for the third year of the diploma of art, film and television course. Value: $250 each.

Kodak (Australasia) Pty Ltd Scholarships
Two scholarships available for graduating students for the best cinematography and the best animation. Value $1,000 each.

Robert Fine Memorial Scholarship
AAV Australia Pty Ltd
Awarded for the best screenplay by a student graduating in a film, video or animation course. Value: $500.

USP Needham Scholarship
Awarded to an outstanding student proceeding to the second year of the diploma of art, film and television course. Value: $250.

The Margery Withers and Richard McCann Scholarship
Available for the second year of the diploma of art, graphic design course. Value: $200.

Film and Television diploma subject details

First year

RF150 Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisites, nil
Assessment is continuous
In the first semester students undertake the production of short exercises in order to gain an understanding of television production techniques. Working in groups and by rotating roles, each student experiences the responsibilities of directing, vision mixing, sound recording and mixing, lighting, camera operation, videotape operation, design, graphic design, location production, floor managing and video editing.
In the second semester, each student assumes the responsibility for the script and direction of a production. The students form crews for these productions and it is possible for individuals to begin to specialise in production roles such as camera operation, sound recording, etc.

RF160 History of Cinema 1
Two hours per week for two semesters
Prerequisites, nil
Assessment is continuous
Regular discussion screenings. A cross-section survey of periods and styles of film-making. Titles are selected to demonstrate the development of basic cinematic concepts. Assignments are expected to relate these concepts to current film-making practice. In all three years of this subject, assignments may be presented in written, audio, video or film form.

RF140 Script Writing 1
Two hours per week for two semesters
Prerequisites, nil
Assessment is continuous
Students first acquaint themselves with various genres of TV writing — news, current affairs, documentary, comedy, commercial and drama. In the second semester they are then introduced to the basic elements which govern writing for the screen — light, sound, movement, time, dramatic form, characterisation and theme.

Second year

RF250 Assigned Projects 2
Twenty hours practical per week for two semesters
Prerequisites, nil
Assessment is continuous
During the first semester students undertake introductory studies in film technology and production covering directing, lighting, camera operation, wild and synchronous sound recording, mixing and laying sound tracks, editing, producing, titles, continuity, A and B roll negative matching, sensitometry and laboratory services.
During the initial short exercises the students gain technical control of the medium before embarking upon more complex group productions. They change their roles from production to production until they are familiar with all the major functions.
For the first half of the second semester, second-year students crew for third-year students, gaining experience working on relatively ambitious projects for which large crews are sometimes required.
During the last eight weeks of the year the students produce three films based on scripts selected from the Script Writing 2 component. It is expected that these should show significant advancement in technical and artistic competence by comparison with first-semester productions.

RF260 History of Cinema 2
Two hours per week for two semesters
Prerequisite, AR171 Result of Studies 1
Assessment is continuous
Films representative of different periods and nations are screened and discussed with a view to identifying their essential characteristics. Assignments are set which require the students to appraise these ideas and influences.
RF240 Script Writing 2
Two hours per week for two semesters
Prerequisite, AR171 Result of Studies
Lectures cover the basic principles of dramatic structure such as the choice of theme, characterisation, character development, action, point of attack, orchestration, conflict, climax and resolution. Points made are related to the major film genres.
Students are encouraged to write short scripts with the possibility of theirs being produced as assigned projects.

Third year

RF350 Assigned Projects 3
Twenty hours practical per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
In the final year the student is concerned with eight 'units' of production involvement given the following options:
   - Script writing
   - Directing
   - Lighting/cameraitalities
   - Continuity/editing/negative matching
   - Producing
   - Sound recording/mixing
   - Art direction/graphics/stills

For production purposes, film or video students are encouraged to function as a crew. It is possible for individuals to begin to specialise with regard to options above.
The content of programs is not specified. Style and duration are determined in part by the resources and budget available.
In the final year the student may work in film or television.
Swinburne usually meets all assigned project costs and provides associated equipment.

RF360 History of Cinema 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
Regular discussion screenings. Titles are selected to probe issues from Years I and II in greater depth. Assignments are expected to relate these issues to students' vocational preferences and expectations.

RF330 Methods of Production 3
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies 2
Assessment is continuous
The student is required to prepare a 2000 word essay on an aspect of contemporary film or television production, selecting a topic from a list stipulated by the lecturer.

References
Lipton, L. Independent Filmmaking. Lond., Studio Vista, 1974
Millerson, G. The Technique of Television Production. Lond., Focal Press, 7th edn, 1970

Applied Film and Television graduate diploma/degree subject details

RF450 Assigned Projects
Twenty-one hours per week for two semesters
Prerequisite, first degree or diploma in any discipline
Assessment is continuous
All three strands of study (film, television and animation) have a similar basic structure. Students are introduced to writing and production skills in the first semester and then undertake individual productions in the second semester. With regard to the latter, each student is responsible for the script, direction and editing.

Semester 1

Script development
Sixteen weeks at three hours per week
These studies deal with the nature of the medium, critical and creative theory and the identification of a topic, an audience and a purpose. Short exercises lead to the writing of a script for production in the second semester.

Production techniques
Sixteen weeks at eighteen hours per week
Lectures, demonstrations and practical exercises, leading to technical control of the medium.

Semester 2

Production
Sixteen weeks at twenty-one hours per week
Each student, assisted by a student crew as required, directs the script they have written in the first semester.
Finished programs are presented to 'real' audiences and their effectiveness assessed.
Note: Despite the pragmatic objectives of the course, an innovative approach is often essential if information is to be imparted effectively.
There is no restriction of the subject areas that may be Investigated provided there is an associated audience.

Graphic Design diploma/degree subject details

First year

RG101 Assigned Projects 1
Twenty hours practical per week for two semesters
Prerequisite, nil
Assessment is continuous
Assigned projects refer to a co-ordinated 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, skilfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group assignments also allow students to develop a broader understanding and appreciation of other students' particular abilities.
A sequential program of applied design and communication projects is directed at developing a general awareness of visual aspects of the students' environment and facility for critical objective analysis.
Specific study areas include:

Design
The object is to equip students with a 'design vocabulary' to allow creative expression in areas of two and three dimensions. As the year progresses, design projects increasingly interact with drawing, photography and design for print. In this way students develop an appreciation and competence over a broad range of communication problems.

Photography
A comprehensive introduction to still photography as a creative medium and at cultivating visual awareness through study of controlled lighting, spatial relationships, form, product and fashion photography, photo-journalism, photo-reproduction techniques (e.g. developing and printing), pictorial editing, various colour processes and costing.

Design for print
Introduction to a comprehensive study over the three years of the course, which includes reproduction of lettering, typographic and symbol design, illustration, and all aspects of production with particular emphasis on experimental work in offset lithography and screen printing.

Drawing
Expanding vision through assignments which develop control of drawing as a discipline for research and invention. Subject matter includes the figure, perspective, object drawing and natural forms.

Textbooks
Students are advised not to purchase textbooks or references until classes commence.
Faculty of Art

RG111  **History of Arts 1**
Two hours per week for two semesters
Prerequisites, 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.

AT193  **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 graphic design. Attention is given also to the analysis and interpretation of written and visual material, clarity and accuracy in the presentation of ideas, and writing techniques employed in applied areas, such as copywriting, design rationales and publications.

AT252  **Theory of Communications**
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. Both written and practical assignments are required throughout the year. There is also a major assignment involving consistent monitoring of current media programs.

TS193  **Typewriter Keyboard Training**
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 electric direct impression typesetting, word processing and computer photo-setting systems used in the second and third year of the course.

Second year

RG201  **Assigned Projects 2**
Twenty hours practical per week for two semesters
Prerequisite, AR140 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 organizations. Study areas include — design, photography, methods of production, typography, history of arts and sociology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.

Methods of production
A comprehensive study 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 typesetting for book, advertising and display typography.

AT290  **Psychology**
Two hours per week for one semester
A general introductory course in psychology providing a background to Applied Psychology in the third year. Areas to be dealt with include: perception, learning, emotion, values and attitudes, normal and abnormal behaviour, and social psychology. 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 physiological factors relevant to personal growth and development such as relaxation, nutrition and stress-reduction.

Diploma in Graphic Design

Third year

RG301  **Assigned Projects 3**
Twenty hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
Assessment is continuous
The final-year student is encouraged to move towards one of the main studies with the aim of producing solutions to advanced problems of communication design at a professional level, e.g. advertising design in various graphic media, publication design, corporate image design and educational technology. Special bias studies are offered, including photography, three-dimensional design, audio-visual and publication design.

RG320  **Methods of Production 3**
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
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.

AT391  **Applied Psychology**
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
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.
Degree in Graphic Design

Third year

RG321  Print Technology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
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.

AT395  Applied Psychology
Two hours per week for two semesters
Prerequisite, AR240 Result of Studies 2
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, AR240 Result of Studies 2
Assessment is continuous

(See "Y" chart.)

Fourth year

RG410  Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
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 statement.

BS492  Business Administration
Three hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
Assessment is continuous

The aim of this subject is to give students a general understanding of the business environment. Particular attention is paid to relating this aim to relevant business sectors with which students will be involved.

Specific consideration is given to:
- theoretical and practical aspects of marketing and consumer behaviour;
- factors and problems involved in establishing and running a small business; and
- gaining an understanding of the behavioural and interpersonal aspects of working in a creative environment.

Much emphasis is placed upon maintaining direct relevance and application of classwork to the students' special skills and the business situations they will encounter.

Students are required, both in groups and individually, to submit written and practical assignments.

References
Specific articles and texts are referred to when commencing each topic.
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— Subject details ............................................. AT25
Part-time course in Applied Social Research .......... AT25
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Faculty of Arts

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K. Middleton, BA(Mon), MA(LaT)
K.J. Rowley, RA(Hons)(Melb)
J. Schmid, MA(Melb)
R.R. Smith, MA(Mon), LLB(Adel), MA(New School)
Arts courses offered

Bachelor of Arts
Graduate Diploma in Applied Social Psychology
Graduate Diploma in Japanese
Graduate Diploma in Urban Sociology
Master of Arts

Undergraduate courses

Bachelor of Arts
Prior to 1982, students enrolled in either a Bachelor of Arts or Diploma of Arts program. Although a Diploma of Arts is no longer offered, students originally enrolled in the diploma program may qualify for degree status upon completion of the equivalent of two years of full-time study if they have satisfied the prerequisites for stage three subjects.

Full-time
The Bachelor of Arts course requires three years of full-time study, during which time a unit value of twenty-four must be accrued.

Part-time
Many students undertake their courses by part-time study. At the rate of four units per year, it would usually take six years to gain a unit value of twenty-four, 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, synthesise and assess information, how to conceptualise issues, and to express themselves 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 rem18 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, accredited by the Victorian Institute of Secondary Education 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 background. A faculty quota for this type of entry will be applied.

Tertiary Orientation Program
Applicants who have completed a Tertiary Orientation Program, 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 College or TAFE College concerned.

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 educational background, employment background, together with the written reasons for wishing to undertake the Swinburne BA. A 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 educational background, employment background, together with the written reasons for wishing to undertake the Swinburne BA. A quota for this type of entry will be applied. No interview is required.

Applications

Full-time first year — to Victorian Universities
Part-time all years — to Swinburne
Full-time later years — to Swinburne

Applications seeking a full-time place in the Bachelor of Arts course must apply through the Victorian Universities Admissions Committee. Application for a part-time place must be made directly to Swinburne.

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. The transfer of students from other faculties, or from other institutions, shall be at the discretion of the Dean, and shall be contingent upon the availability of places and on the applicant having a satisfactory study record.

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 Faculty Secretary. Deferments will be valid for a maximum period of one year and only for entry to the course for which the offer was made.

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 be also 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 their 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 Faculty Secretary.

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 Education Department are advised to consult the appropriate body about seeking exemptions from degree and diploma courses on the basis of teacher training qualifications, as the Department 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 major/minor studies are grouped (e.g. psychology, literature).

'Semester subject' — refers to a single half-year unit of study.

'Full-year subject' — refers to either two consecutive half-year units, or one subject extending over one year.

'Unit value' — the value attached to a particular subject, either full-year or semester.

'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 —
   Historical and Philosophical Studies
   Italian
   Japanese
   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 offered at degree level within Swinburne. Students must apply to the Board for this approval before they have completed subjects totalling a unit value of six;

(b) gain a unit value totalling twenty-four for subjects passed in stages one, two and three, including a unit value of at least six for stage two subjects.

In completing the BA course requirements students must not include stage one subjects totalling a unit value of more than ten and must not include more than two majors.

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, 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 only one semester subject 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 chairman of the relevant department.

Full-time students

(a) A full-time student is usually required to enrol in sufficient subjects to gain a unit value of eight in one year. In special circumstances, permission may be granted to vary this requirement on application to the Dean of Faculty.

(b) In each year of study full-time students are expected to gain passes totalling a unit value of at least six. After two years at Swinburne, a full-time student is expected to have gained a unit value of at least 12 to be eligible to continue full-time study in the following year.

(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 Dean of Faculty, giving reasons for the request.

Part-time students

(a) A part-time student is usually required to enrol in sufficient subjects to gain a unit value of four in one year. Permission may be granted to vary this requirement on application to the Dean of Faculty.

(b) A part-time student will be considered to have made satisfactory progress if he or she has achieved passes totalling a unit value of three 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. Application should be made to the Dean of Faculty.

Amendment to enrolment

Students may amend their subject selection by completing an Amendment to Enrolment form which must then be approved by the Dean, Faculty of Arts. Amendment sessions are held at pre-advertised times during the first three weeks of each semester. Students are not 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 Friday 11 April 1986. For a subject which concludes at the end of the second semester — not later than Friday 5 September 1986. (For 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 apply in writing to the Faculty Secretary. 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 Friday 11 April 1986. For subjects which conclude at the end of the second semester — not later than Friday 5 September 1986. 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 Dean, Faculty of Arts.

Normally no more than 2 (two) semesters leave of absence may be applied for at one time.
A student who feels aggrieved by the decision concerning a request for leave of absence may appeal to the Dean of the Faculty.

Graduate Diploma

Usually, leave of absence is granted to graduate diploma students only if one semester of their course has been completed.

Withdrawal from all study

Students wishing to withdraw from all study must lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915), or the Student Administration Office, and return their identity cards. (For further details see under the section headed 'Enrolment regulations'.)

Concurrent majors at other institutions

Students who wish to study a major at another institution can obtain further details about application procedures from the Arts Faculty Secretary.

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 that will be 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 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 or minor, e.g. AP102 Law and Society.

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, course regulations specify that:

(a) students taking both majors within the Faculty may 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 approval.

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 from stage three, or else studied concurrently with the stage three subject. Any divergence from this requirement must have the approval of the subject convener concerned and the Dean, 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 may take subjects from stages two and three. Any divergence from this requirement must have the approval of the subject convener concerned and the Dean, Faculty of Arts.

Time allocations per week

Each semester subject runs for fifteen 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.

Scholarships and Prizes

Study in Japan Scholarship

Awarded to assist a student to complete Japanese 3 in Japan. Applications close in May. 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 five departments, each responsible for different subject areas, they are:

Department of Humanities
- Historical and philosophical studies
- Literature
- Media studies

Department of Languages
- Introduction to language
- Italian
- Japanese

Department of Liberal Studies
- Subjects for students of other faculties only.

Department of Psychology
- Psychology

Department of Social and Political Studies
- Political studies
- Sociology

Each department has a head or chairman and enquiries may be directed to their secretaries.

Historical and Philosophical Studies

The subjects offered under the heading of historical and philosophical studies draw on the traditional areas of philosophy, history of ideas, and 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 emphases are those of the social historian and the historian of ideas, whereas the philosophical subjects pursue a conceptual approach to historical and contemporary issues.

No scientific or mathematical knowledge is presupposed in these courses.

Students may take majors which are basically history and philosophy of science or philosophy, or may choose a major which combines appropriate subjects from both areas.

Students are advised to examine carefully the prerequisites for stage two and three subjects before planning their courses.

A major in Historical and Philosophical Studies comprises one semester subject at stage one. Two semester subjects at stage two. Four semester subjects at stage three.

Subjects offered

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<thead>
<tr>
<th>Code</th>
<th>Stage 1</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>AH100</td>
<td>Introduction to Philosophy</td>
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<tr>
<td>AH101</td>
<td>History of Ideas</td>
<td>1</td>
</tr>
<tr>
<td>AH102</td>
<td>Theories of the Universe</td>
<td>1</td>
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</table>

| AH200  | Moral and Political Philosophy | 1          |
| AH201  | Mind, Language and Thought | 1          |
| AH202  | Technology and Society | 1          |
| AH203  | Nature and Human Nature | 1          |

| AH300  | Philosophy of Art and Education | 1          |
| AH301  | Rationality | 1          |
| AH302  | Social Studies of Science A | 1          |
| AH303  | Social Studies of Science B | 1          |
| AH304  | Philosophy of Science A | 1          |
| AH305  | Philosophy of Science B | 1          |
Subject details

Stage one

AH100 Introduction to Philosophy
Four hours per week daytime
or Three hours per week evening
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 judgement, the existence of God, religious concepts and the problem of evil.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks

References
Plato. The Republic. 3rd edn, Harmondsworth, Penguin, 1974
Shaffer, J.A. Reality. Knowledge and Value. N.Y., Random House, 1971

AH101 History of Ideas
Four hours per week daytime
or Three hours per week evening
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 upon our lives. Darwin's theory of evolution totally transformed our understanding of our origins, our relationships to each other, to society and to the environment. Evolutionary theory has also affected many branches of science, from geology to psychology, giving them an understanding of process and of change through time. The intention is to bring out the relation of the evolutionary idea to the wider social context; scientific ideas are important not only in their impact on our culture, but are also to be seen as a product of our culture.

Textbooks
Please consult with lecturer before buying textbooks

References
Theobald, D. W. Introduction to the Philosophy of Science. Lond., Methuen, 1969
Toulmin, S. and Goodfield, J. The Discovery of Time. Chicago, Midway, 1976

AH102 Theories of the Universe
Four hours per week daytime
or Three hours per week evening
Prerequisite, nil
Assessment is continuous

Ideas about the world and man's 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
Four hours per week daytime
or Three hours per week evening
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

An examination of some of the traditional 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 obligation, the common good and social contract.

Some of the more important writers to be considered are: Plato, Aristotle, Locke, Mill, Aquinas, Hobbes, Montesquieu, Rousseau and Russell.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks

References
Murray, A.R.M. An Introduction to Political Philosophy. Lond., Cohen and West, 1968

AH201 Mind, Language and Thought
Four hours per week daytime
or Three hours per week evening
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous

A critical examination of some of the major problem areas in philosophy chosen from:
(a) mind and body; sensations and brain processes; dualism and monism;
(b) free will, determinism and the casual 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
Four hours per week daytime
or Three hours per week evenings
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous
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
Buchanan, R.A. History and Industrial Civilization. Lond., Macmillan, 1979

Textbook

References
Forbes, R. Man the Maker. Lond., Abelard, 1964
Harris, M. Cannibals and Kings. Lond., Fontana/Collins, 1978
Lilley, S. Men. Machines and Historv. 2nd edn, Lond., Lawrence and Wishart, 1969

AH203  Nature and Human Nature
Four hours per week daytime
or Three hours per week evenings
Prerequisite, one of AH100, AH101, AH102 or approved equivalent
Assessment is continuous
The purpose in this course is to examine the ways in which biological theories of behaviour and heredity have influenced social thought. The interrelationships between theories of nature and theories of human nature are explored in terms of the birth of the new social sciences of psychology and anthropology 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 anthropology; 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
Fancher, R. Pioneers of Psychology. N.Y., Norton, 1979

References
Fancher, R. Pioneers of Psychology. N.Y., Norton, 1979
S. J. Men. Machines and Historv. 2nd edn, Lond., Lawrence and Wishart, 1969

Stage three
AH300  Philosophy of Art and Education.
Three and a half hours per week
Prerequisites, AH100 and two of AH200, AH201, AH202 and AH203 with at least one of AH200 and AH201
Assessment is continuous
In this subject, we explore the extent to which the education of feelings and emotions and the promotion of the ‘aesthetic experience’ through art appreciation can be justified as part of the educational process. This involves an examination of problems of definition, interpretation and evaluation of the area of art and educational theory, through analysis of aesthetic and education concepts. The subject therefore furthers an understanding of linguistic philosophy by introducing a comparative study of analytic approaches to the language of education and the language of art.

Preliminary reading
Dewey, J. Experience & Education. N.Y., Capricorn Press, 1963

AH301  Rationality
Three-and-a-half hours per week
Prerequisites, AH100 and two of AH200, AH201, AH202 and AH203 with 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
Trigg, R. Reason and Commitment. Lond., Cambridge University Press, 1973

AH302  Social Studies of Science A
Three-and-a-half 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, pertains to the contemporary debate on the social construction of scientific knowledge. The extent to which science reflects the culture in which it is set has been the subject of much recent writing about science. Some authors make the claim that scientific knowledge is autonomous, and the proper objects of sociological inquiry are the various social and institutional relationships which hold within the community of scientists, both in the laboratory setting, and in the social and economic framework of which the laboratory is a part. More recently, the claim has been made that social factors contribute in a crucial way to the content of science itself, to the type of knowledge that is produced. These claims will be investigated through case studies on the themes of laboratory life, science as a profession, the notion of ‘public science’, the enlightenment ideal of science and progress and its twentieth century consequences, and the social responsibility of the scientist (for example, the nuclear power debate).

Textbooks
Chambers, D.W. On the Social Analysis of Science. Geelong, Deakin University, 1984

References
Cameron, I. and Edge, D. Scientific Images and Their Social Uses: An Introduction to the Concept of Sociology. Lond., Butterworths, 1979

AH303  Social Studies of Science B
Three-and-a-half 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 show the relationship between theories of life, medicine, technology, social theory and social action in the nineteenth and twentieth centuries. Topics covered include: Man's Place in Nature and the Woman Question in Victorian social theory; social aspects of medical theory and practice such as changes in public health, the conquest of epidemic disease and the social organisation of insanity; the rise of the birth control movement; the rise of biotechnology; ecological and environmental history; the aboriginal and the colonial experience of the Australian environment compared and contrasted.

Preliminary reading

References
Mayne, A.J.C. Fever, Squalour, and Vice. Univ. of Old Press, 1982

AH304 Philosophy of Science A
Three-and-a-half hours per week
Prerequisites, two of AH200, AH201, AH202, A203 or an approved equivalent
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 do 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 development of knowledge? Among the authors whose works will be considered are Durbin, Hempel, Kuhn, Losee, Nagel, Ravetz, Ziman.

Preliminary reading
Theobald, D. An Introduction to Philosophy of Science. Lond., Methuen, 1968

Textbooks
Please consult with lecturer before buying textbooks.

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

AH305 Philosophy of Science B
Three-and-a-half hours per week
Prerequisites, two of AH200, AH201, AH202, AH203 or an approved equivalent
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? What are the consequences for the sciences and social sciences? Among the authors whose works will be considered are Dewey, Smart, Popper, Lakatos, Laudan, Kuhn, Ravetz.

Preliminary reading
Frank, P. ed. The Validation of Scientific Theories. N.Y., Collier Books, 1961

Textbook
Kempniesner, H. Knowledge and Science. Melb., Macmillan, 1977

References
Kuhn, T. The Structure of Scientific Revolutions. 2nd edn, Chicago, University of Chicago Press, 1970
Smart, J. Between Science and Philosophy. N.Y., Random House, 1968

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. At stage one, texts chosen reflect important currents of ideas of the nineteenth and twentieth centuries. Stage two 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 experience 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 AL200 and AL201 (not necessarily in that sequence) at stage two, followed by 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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<tr>
<td>AL100</td>
<td>Twentieth Century Literature</td>
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<td>AL101</td>
<td>Nineteenth Century Literature</td>
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<td>Stage 2</td>
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<tr>
<td>AL200</td>
<td>Elizabethan and Jacobean Literature</td>
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<tr>
<td>AL201</td>
<td>Seventeenth and Eighteenth Century Literature</td>
<td>1</td>
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<tr>
<td>Stage 3</td>
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<tr>
<td>AL300</td>
<td>Literature of the United States — 19th Century</td>
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<tr>
<td>AL301</td>
<td>Literature of the United States — 20th Century</td>
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<tr>
<td>AL302</td>
<td>Australian Literature — 19th Century</td>
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<tr>
<td>AL303</td>
<td>Australian Literature — 20th Century</td>
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Subject details

Stage one

AL100 Twentieth Century Literature
Four hours per week daytime
Three hours per week evenings
Prerequisite, 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 Lend., Methuen, 1970
Deutsch, B. Poetry Handbook. 2nd edn, Lond., Cape, 1965

AL101 Nineteenth Century Literature
Four hours per week daytime
Three hours per week evenings
Prerequisite, nil
Assessment is by assignments and examination

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

Preliminary reading
As for AL100
Stage two

AL200 Elizabethan and Jacobean Literature
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisite: ALIOO or ALI01 or approved equivalent  
Assessment is by assignments and examination  
Several Shakespearean plays are studied intensively. There are background lectures on Elizabethan society 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
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisite: AL200 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
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisites, either AL100 or AL101 or equivalent and 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, Whitman, 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  
Buell, L. Literary Transcendentalism: Style and Vision in the American Renaissance. USA, Cornell University Press, 1975  

AL301 Literature of the United States — 20th Century
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisites, either AL100 or AL101 or equivalent and AL200 and AL201 or equivalents  
Assessment: essay, class paper and examination; class contribution  
Basically, the same approach as in 19th Century literature, focusing on similar themes and interrelationship of literature and social and cultural factors. Emphasis on developments and continuities of earlier movements and initiatives, as well as important changes that mark the emergence of 'modern' literature in the 20th Century. Included are Eliot, Fitzgerald, O’Neill, Stevens, Miller and Sylvia Plath.

Preliminary reading  
Bond, M.N. Twentieth Century American Literature. USA, Arden Library, 1977  

General surveys  
Howard, L. Literature and the American Tradition. USA, Gordian Books, 1972

AL302 Australian Literature — 19th Century
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisites, as for AL300 and AL301  
Assessment: essay, class paper and examination; class contribution  
The development of the novel and the short story in Australia during the 19th Century up to the time of Federation. Poetry during the 19th Century.

Preliminary reading  
Moore, T. Inglis. Social Patterns in Australian Literature. Syd., Angus and Robertson, 1971  

AL303 Australian Literature — 20th Century
Four hours per week daytime  
or  
Three hours per week evenings  
Prerequisites, as for AL300 and AL301  
Assessment: essay, class paper and examination; class contribution  
From Federation to the present day. Poetry, fiction and short stories. In each module students will undertake a piece of original research which need not necessarily be any one of the authors studied on the course.

Preliminary reading  
As for AL302
Media Studies
The approach in this course is essentially analytical and critical, rather than production-oriented. In 1986 all first-year students will undertake a foundation subject — AM100, in which we examine how the media produce meanings and how we understand and interpret media communication. AM101 is not offered in 1986. Both second-year subjects — AM200 and AM201 or their equivalents, are compulsory for entry into third year. AM302 and AM303 combined are a full-year radio production and criticism subject for day students, whereas AM304 and AM305 combined are a full-year subject for evening students, without production components. The media studies degree major comprises one subject at stage one, two subjects at stage two, and two pairs of subjects at stage three. The unit value of the course is 7 units, unless students completed units offered prior to 1986, when they might have taken an additional subject at first-year level.

Subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>AM100</td>
<td>Foundation Course in Media 1</td>
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<tr>
<td>AM101†</td>
<td>Foundation Course in Cinema 1</td>
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<tr>
<td>AM200</td>
<td>Publishing and Broadcasting 1</td>
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<tr>
<td>AM201</td>
<td>Institutions and Media 1</td>
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<td>AM300</td>
<td>Cinema Studies 1</td>
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<tr>
<td>AM301</td>
<td>Media Public Policy 1</td>
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<td>AM302</td>
<td>Radio Production and Criticism A 1</td>
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<td>AM303</td>
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<tr>
<td>AM305</td>
<td>Radio Criticism B (Evening) 1</td>
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</tbody>
</table>

Stage one

AM100 Foundation Course in Media
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, 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 critical investigation of both film and television texts is undertaken in class and in group projects. This discussion of programs and commercials is accompanied by an introduction to critical theory about the process of communication.

The implications of this approach include an exploration of key relationships between the individual (film and television viewer), the media text, and the society at large. These relationships are traced in terms of shared knowledge and in terms of access to certain kinds of information and meaning. The effects of media are studied by examining media representations of reality; enquiring into what is being communicated and how it is understood. This approach becomes a study of codes, sign systems and systems of communicating meanings; a means of establishing the role of the media within social processes, and how they form part of a more general construction of reality.

Recommended reading
Belsey, C. Critical Practice. N.Y., Methuen, 1980
Berger, J. Ways of Seeing. Lond., BBC, 1974
Fiske, J. and Hartley. J. Reading Television N.Y., Methuen, 1980
Williamson, J. Decoding Advertisements. Lond., Marion Boyars, 1978

AM101 Foundation Course in Cinema
(This subject is not being offered in 1986)
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, nil
Assessment is continuous

The initial emphasis in this subject is upon the detailed examination of images and sequences from selected films, and thus upon the ways in which meanings are articulated visually. Close attention is given to framing, colour, camera movement, and the importance of relationships constructed with neighbouring images and sequences, along with character, action, dialogue and music. Extracts studied are chosen from films such as Citizen Kane, Battleground, La Regle du Jeu, An Autumn Afternoon, Father of the Bride, Rio Bravo, The Searchers, Psycho, Swing Time, There’s Always Tomorrow. Tout Va Bien, La Feme Intime, L’Annee Derniere a Marienbad, The Parallax View, Dressed to Kill and My Dinner with Andre.

Later the subject moves into broader questions concerning film narrative, the pursuit of a theory of film (with special emphasis on ‘the issue of the viewer’), systems of representation, the range of critical approaches to individual films, the problems entailed in the construction of a history of film, the processes of production, distribution and exhibition, and the development of ‘alternative film’ cultures. The approach in this section explores the kinds of relationships that can be found between films (and writings about film) and the cultural contexts from which they emerge and in which they are viewed. Special attention is given to the Australian cinema.

References
Cinema Papers and Film News

Stage two

AM200 Publishing and Broadcasting
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, AM100 or equivalent
Assessment is continuous

In this subject, we attempt 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. Theories and issues central to the subject include the notions of a free press, concentration of media ownership, broadcasting accountability and social responsibility, advertising and assessment of public taste, alternatives to ‘mass culture’, access and reform. Concepts important to the process of publishing are explored, such as the nature of bias, subjectivity and balance in the expression of personal views, the role of professional institutions, and public comment, media invasion of privacy and freedom of information. Journalism is 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 particular written assignments for publication.

References
Donney, W. and Gleeong. D. Deakin University, School of Humanities. Open Campus Program
Windschuttle, K. and E. ed. Fixing the News: North Ryde, N.S.W., Cassell, 1981

AM201 Institutions and Media
Four hours per week daytime
or
Three hours per week evenings
Prerequisites, AM100 or equivalent
Assessment is continuous

The course begins by looking at the institutions of school and family. It goes on to examine the ways in which media institutions produce meaning. Attention is focused on the organisation, policy and practices of institutions as they construct particular themes and images of social experience. The Australian Broadcasting Corporation is examined as a case study of a broadcasting institution that produces distinctive and characteristic kinds of programming; and constructs certain attitudes and
expectations among its viewers and listeners. Emphasis is placed upon analysis of programs, programming policy, institutional organisation and ideology. Project work is important in teaching the following areas: analysis of programs and programming policies, methods of surveying broadcasting institutions in terms of their historical and cultural roles, ABC history and its dependence upon a model of BBC public service broadcasting, study of internal organisation, industrial relations and program production processes.

References
Inglis, K. This Is The A.B.C., Melb., MUP, 1983
National Broadcasting in the 1990s; AGPS. Canberra. 1981. known as the Dix Report
Report by the Committee of Review of the Australian Broadcasting Commission, The ABC in Review

Stage three

AM300 Cinema Studies
Four hours per week
Prerequisites, AM100 or AM101 or equivalent, and two from AM200 or 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 noirs, or the problems of realism, or ‘to cut or not to cut!’). These films will provide study samples for a pursuit of ideas introduced during the previous two years of the course into a systematic analysis of film.

The emphasis is upon examining and developing various modes of criticism within the context of film theory. Attention is thus focused upon structuralist and semiotic studies, and their function in relation to the humanist discourse which dominates more traditional critical work. In this context, particular questions to do with the developing study of film will be on the agenda for ongoing consideration: for the ways in which ideology is inscribed into the works examined (as well as into the methods of examination), for various systems of representation, for the usefulness of the work of the ‘frame-by-frame heretics’, for the kinds of relationships constructed between a film and its viewer, for the place of ‘the author’ in this process in relation to the formal and thematic organisation of the works which bear his/her name, for the usefulness of ‘genre’ studies, for the function of the ‘star system’, and for the relationship between the film, the industry and the culture in which they exist.

Assessment will be based upon essay presentation and class work.

References

AM301 Media Public Policy
Four hours per week
Prerequisites, AM100 or AM101 or equivalent, and AM200 or AM201 or equivalent
Assessment is continuous

The theme of this subject is an examination of media and communications technology in the context of an information or post-industrial society. The implications of the convergence of computers with telecommunications, referred to as communications, are examined in their broadest context. There is an analysis of the plethora of government inquiries in this area, where students are required to specialise: the cable television and radiated subscription television inquiry conducted by the Australian Broadcasting Tribunal—known as the Jones Report; the Committee of Inquiry into Telecommunications Services in Australia known as the Davidson Report; and the Commonwealth Government Task Force on the National Communications Satellite System, known as the White Report. A range of telecommunications policy matters is canvassed, including Aussat and Australia’s domestic satellite, videocassette in the public and private sector, and the new home communications technology of home computer, videocassette recorders, teletext, and videodiscs.

Considerable emphasis is placed on the methodology of investigation; validity of evidence, analysis of government reports and lobbyists, interpretation of documents and the presentation of data. The subject is taught in a comparative framework of United States, Canadian and French telecommunication. Several major international communications policy issues are explored — the tendency towards broadcasting de-regulation by the FCC (USA) and CRTC (Canada), the crisis in public broadcasting, open skies for satellite and Third World spectrum space concerns, the politics of information transfer, and the

privacy debate. Students are encouraged to present research in a form which will enable their work to be available to the community, as published papers, submissions to enquiries, or as public affairs radio programs.

References

AM302 Radio Production and Criticism A
Four hours per week
Prerequisites, AM100 or AM101 or equivalent, and AM200 or AM201 or equivalent
Assessment is continuous
This subject incorporates both radio criticism and radio production. It has an extensive production content in which all techniques basic to pre-recorded and live radio broadcasting are covered, including recording techniques, radio interviewing, scripting, narrating, editing and sound mixing. The main emphasis is on documentary conception and production, in which students work on both individual and group projects.

Interwoven with this production course is a theoretical investigation where the medium is approached from a number of distinct but interrelated perspectives. An attempt is made to discover those respects in which radio production and broadcasting are relatively autonomous from other media, along with those features shared with other forms of cultural production. This involves, for example, a study of the differences between speaking and writing, listening and reading, as one step toward establishing a framework for radio criticism which is not merely a simple redirection of methods developed historically through the criticism of literature. Similarly, phenomena specific to the perception and cognition of meaning in sound is developed, and through extensive listening to sound, music and radio, a working vocabulary of sound analysis is developed.

Textbook

References
Anheim, R. Radio. Lond., Faber and Faber, 1936
Belsey, C. Critical Practice. Lond., Methuen, 1980
Hood, S. ‘Brighton on Radio’, Screen. V20, Nos 314

AM303 Radio Production and Criticism B
Four hours per week
Prerequisites, AM100 or AM101 or equivalent, and two from AM200 or AM201 or equivalent, and AM302
Assessment is continuous
In this subject radio production skills are developed further and applied to produce a wider range of radio forms. The role of radio within our culture is considered from two perspectives: firstly through an examination of broad structural features of the medium and the consequences of these for the democratic creation and management of mass culture in our society; secondly through a structural analysis of the creation of meaning within radio, aiming to uncover the ‘preferred reading’ of social reality which is being ‘spoken’ within the construction of mainstream radio broadcasts in Australia. The analysis of form in radio continues with 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 upon the production of radio texts by radio work processes on the other. The notion of aethetics in general, and the question of radio aesthetics in particular are examined. Students are required to carry out original radio criticism using Melbourne radio broadcasts as texts, as well as conceiving (on paper) new forms of radio production.
**Textbook**
Higgins, C.S. and Moss, P.D. Sounds Real. St Lucia, Q.U.P., 1982

**References**
As for AM302

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**AM304** Radio Criticism A (Evening)
Four hours per week
Prerequisites, AM101 or equivalent, and AM200 or AM201 or equivalent
Assessment is continuous

The medium is approached from a number of distinct but interrelated perspectives in an attempt to discover those respects in which radio production and broadcasting are relatively autonomous from other media. Along with those features shared with other forms of cultural production, this involves, for example, a study of the differences between speaking and writing, listening and reading, as one step toward establishing framework for radio criticism which is not merely a simple redirection of methods developed historically through the criticism of literature. Similarly, phenomena specific to the perception and cognition of meaning in sound will be identified, and through extensive listening to sound, music and radio, a working vocabulary of sound analysis is developed.

The role of radio within our culture is considered from two perspectives: firstly through an examination of broad structural features of the medium and the consequences of these for the democratic creation and management of mass culture in our society; secondly through a structural analysis of the creation of meaning within radio, aiming to uncover the ‘preferred reading’ or social reality which is being ‘spoken’ within the construction of mainstream radio broadcasts in Australia.

**Textbook**
Higgins, C.S. and Moss, P.D. Sounds Real. St Lucia, Q.U.P., 1982

**References**
As for AM304

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**AM305** Radio Criticism B (Evening)
Four hours per week
Prerequisites, AM100 or AM101 or equivalent and AM200 or AM201 or equivalent and AM304
Assessment is continuous

The analysis of form in radio continues as subject with 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 upon the production of radio texts by radio work processes on the other. The notion of aesthetics in general, and the question of radio aesthetics in particular are examined. Students are required to carry out original radio criticism using Melbourne radio broadcasts as texts, as well as conceiving (on paper) new forms of radio production. Assessment is based mainly upon an extended project which applies principles covered in both radio subjects to a Melbourne radio station or to a specific form used by several stations.

**Textbook**
Higgins, C.S. and Moss, P.D. Sounds Real. St Lucia, Q.U.P., 1982

**References**
As for AM304

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**Italian**
This course is designed to acquaint students with the Italian language, the native tongue of one of Australia’s largest migrant 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 migrants 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.

All incoming students in Italian are assessed in terms of their expertise in the language. Those students who show 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 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.

**Subjects offered**

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<tr>
<th>Code</th>
<th>Unit Value</th>
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<tr>
<td>AA100</td>
<td>Italian 1</td>
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<tr>
<td>AA200</td>
<td>Italian 2</td>
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<tr>
<td>AA300</td>
<td>Italian 3A</td>
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<tr>
<td>AA301</td>
<td>Italian 3B</td>
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**Stage details**

**Stage one**

**AT116** Introduction to Language
Four hours per week (three hours evening)
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 sounds 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, 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.

**Reference**

<table>
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<tr>
<th>AA100</th>
<th>Italian 1</th>
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<td>Eight hours per week (six hours evening)</td>
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<tr>
<td>Prerequisite, nil</td>
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<tr>
<td>Assessment is partly continuous, partly by examination</td>
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</table>

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, as well as lectures on Italian history.
History: a general overview of early Rome; Imperial Rome; the Middle Ages; Renaissance Italy; the Reformation; the Political Divisions in Italy. The history segment is taught to Italian I day-students only.

**Textbooks**

*Avventura*, B.B.C., Lond., 1972

**References**

Appropriate references will be given by the lecturers at the beginning of the year.
*Elia, P. I verbi italiani ad ueso degli stranieri*, 12th edn, Verona, Edizioni Scolastiche Mondadori, 1971

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### Stage two

**AA200 Italian 2**

Eight hours per week (six hours evening)

*Prerequisite*, nil

Assessment is continuous

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.

To give students an understanding of the emergence of modern Italy, from the Risorgimento to the outbreak of World War 2.

**Textbooks**

*Soriani, A. Corso di Lingua Italiana per Stranieri*; Firenze, Libreria Editrice Fiorentina, 1974

**References**

*Guglielmino, S. Guida al Novecento*, Milano, Principato Editore, 1971
*Mack Smith, D. The History of Italy 1861-1939*; Laterza, Rome 1973
*Procacci, G. La Storia Degli Italiani*, Bari, Laterza, 1976
*Romano, S. Storia d'Italia dal Risorgimento a Nostri Giorni*, Milano, Arnoldo Mondadori, 1978

**Note:**

In order to complete a major in Italian, students must take both Italian 3A and 3B. The two subjects may be taken concurrently or Italian 3B may be taken after completion of Italian 3A.

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### Stage three

**AA300 Italian 3A**

Six hours per week

*Prerequisite*, AA200 or approved equivalent

Assessment is continuous

The main objectives of Italian 3A are:

To consolidate the students' language skills and to develop these further through a study of appropriate literature and allied grammar; to develop their oral skills through conversation and discussion in Italian; to develop in the students an understanding of contemporary Italy and of Italian immigrants in Australia through the study of contemporary documents, present day Italy and of appropriate films and other media. Italo-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.

*D'Aprano, C. Violenza o Democrazia?* Melb., SARDD, 1979
*Lazzarino, G. Da Capo*, Hojt Rinheart & Winston, 1979

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### 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 provides also, the opportunity to study Japanese culture, society and economy through the language.

The emphasis is on contemporary Japanese.

The subjects AJ100, AJ200, AJ300 and AJ301 form a degree major in Japanese. Usually, AJ300 is completed prior to, or concurrently with AJ301.

Students intending to major in Japanese should enrol in the first instance in AJ100 Japanese 1.

Students undertaking a major in Japanese are highly recommended to enrol also for Introduction to Japan — A Cultural Overview and Communication in Japanese, which provide an essential background to Japanese language and culture, in the following order:

(i) **AJ102, Introduction to Japan — A Cultural Overview** which is offered in second semester, while simultaneously taking AJ100, *Japanese 1*;
(ii) **AJ202, Communication in Japanese** — which is offered in first semester, while simultaneously taking AJ200, *Japanese 2*.

**Introduction to Japan — A Cultural Overview** is available also to those not undertaking the full Japanese language course.

**AT116, Introduction to Language and AP204, Modern Japanese**, offered by the Social and Political Studies Department, are highly recommended.

The language subjects offered in Japanese have been specifically designed to introduce non-native speakers to the Japanese language. These subjects will not meet the needs of native speakers of Japanese. The Department therefore recommends that such students do not take these subjects.

All incoming students in Japanese will be assessed in terms of their expertise in the language. Those students who show a high level of competence in this regard may be encouraged to study an alternative syllabus to that shown in this handbook. If a student requests exemption from any part of a Japanese 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**

<table>
<thead>
<tr>
<th>Code</th>
<th>Stage</th>
<th>Unit value</th>
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<tr>
<td>AJ102</td>
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</table>

**References**

*De Micheli, A.T. Armando Racconta*, Milano, Vangelista, 1982
*Procacci, G. La Storia Degli Italiani*, Bari, Laterza, 1978

Other references will be indicated.
Stage 2
AJ200 Japanese 2 3
AJ202 Communication in Japanese 1

Stage 3
AJ300 Japanese 3A 3
AJ301 Japanese 3B 1

Subject details

**Stage one**

**AT116 Introduction to Language**
Four hours per week (three hours evening)
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 forming 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, 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.

**Reference**

**AJ100 Japanese 1**
Eight hours per week (six hours evening)
Prerequisite, nil
Assessment is continuous

This is a subject designed to introduce students to the Japanese language, and training is provided in language patterns and grammar, writing, conversation, listening and comprehension. Films, slides and a variety of taped materials are used extensively throughout the course. As a further aid, taped cassettes of each lesson are available on loan. It is highly recommended that students enrolled in this subject also enrol for AJ102 which is offered in second semester.

**Textbooks**
Mizutani, O. and N. Nihongo Notes. Vols. 1 and 2, Tokyo, Japan Times, 1977
SIT Languages Department. Reading and Writing Japanese. Vols. 1-5, Meb., Swinburne Press, 1984

**AJ102 Introduction to Japan — A Cultural Overview**
Four hours per week (one evening)
Prerequisite, nil
Assessment is continuous

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

**Reference**

**Stage two**

**AJ200 Japanese 2**
Eight hours per week (six hours 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**
SIT Languages Department. Reading & Writing Japanese. Meb., Swinburne Press, 1984
SIT Languages Department. Trip to Japan — Situational Japanese. Meb., Swinburne Press, 1984
SIT Languages Department. Grammar Notes. Meb., Swinburne Press, 1984

**AJ202 Communication in Japanese**
Four hours per week (one evening)
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 are used.

Students in the main language stream are introduced to Japanese contacts and are required to write essays based on data collected from interviews with these contacts. The contact scheme is an important component of Swinburne's Japanese course as it provides the student with the opportunity to converse in Japanese and to become familiar with Japanese attitudes and customs.

**Preliminary reading**

**References**
Miura, A. English Loanwords in Japanese. Rutland, Va., Tuttle, 1979
Neustupny, J.V. Communicating with the Japanese. Meb., Japanese Studies Centre, 1984
Okada, H. An Introduction to Karji; A Selection. Osaka, Japan, Sanyusha, 1975

**Stage three**

**AJ300 Japanese 3A**
Six hours per week (six hours evening)
Prerequisite, AJ200 or approved equivalent
Assessment is continuous

This subject continues systematically to extend the students' use of spoken and written Japanese. This subject contains four major components: grammar, aural comprehension, reading and conversion.

The grammar component introduces diverse patterns and expressions which are often not included in conventional language textbooks. The aural comprehension component is concentrated on recent radio news broadcasts and a drama series. The reading component covers material which is an important lead-up to newspaper reading and to communicative interaction with natives of Japan.

The conversion component introduces students to particular topics which emphasise cultural differences between Australia and Japan. Students may choose to study stage three in Japan, in which case they are still required to complete the Swinburne stage three course work. A scholarship scheme and a 'Work-in-Japan' scheme have recently been established to enable students to undertake this alternative.

**Textbooks**
Asahi Culture Centre. Chotto Hajo Koto. Asahi Culture Centre, Tokyo, 1981

**References**
Please consult with lecturers before buying these books.
Chaplin, H.I., and Martin, S.E. A White-Collar Worker's Day New Haven, Conn., Yale University, 1977
Kuroyanagi, T. Madogiwano Tottoban. Tokyo, Kodansha, 1981
Saito, S. Nihonjin no Issho. Tokyo, Japan, Nihongo Kyoku Gakkai, 1981
Takeyama, M. Brummi no Tategoto. Tokyo, Popurashia, 1970
Liberal Studies

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT191</td>
<td>Health and Society</td>
</tr>
<tr>
<td>AT192</td>
<td>Applied Psychology</td>
</tr>
<tr>
<td>AT220</td>
<td>Complementary Studies</td>
</tr>
<tr>
<td>AT392</td>
<td>Report Writing</td>
</tr>
<tr>
<td>AT393</td>
<td>Communication Studies</td>
</tr>
<tr>
<td>AT394</td>
<td>Report Writing</td>
</tr>
<tr>
<td>AT493</td>
<td>Brain and Behaviour</td>
</tr>
</tbody>
</table>

For individual subject descriptions see the Faculty of Applied Science Handbook.

Subjects for Art students

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>AT193</td>
<td>Applied Writing</td>
</tr>
<tr>
<td>AT290</td>
<td>Psychology I</td>
</tr>
<tr>
<td>AT395</td>
<td>Applied Psychology</td>
</tr>
<tr>
<td>AT492</td>
<td>Theory of Communication</td>
</tr>
</tbody>
</table>

For individual subject descriptions see the Faculty of Art Handbook.

Subjects for Business students

<table>
<thead>
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<th>Code</th>
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<tbody>
<tr>
<td>AT295</td>
<td>Business Communication</td>
</tr>
<tr>
<td>AT693</td>
<td>Psychology and Interpersonal Skills</td>
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</table>

For individual subject descriptions see the Faculty of Business Handbook.

Subjects for Engineering students

<table>
<thead>
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<tbody>
<tr>
<td>AT195</td>
<td>Communications I</td>
</tr>
<tr>
<td>AT197</td>
<td>Communication Skills</td>
</tr>
<tr>
<td>AT293</td>
<td>Liberal Studies</td>
</tr>
<tr>
<td>AT396</td>
<td>Communications II</td>
</tr>
<tr>
<td>AT691</td>
<td>Urban Sociology</td>
</tr>
<tr>
<td>AT692</td>
<td>Energy Policy Formation</td>
</tr>
</tbody>
</table>

For individual subject descriptions see the Faculty of Engineering 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:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
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<tbody>
<tr>
<td>AT792</td>
<td>Applied Psychology</td>
</tr>
<tr>
<td>AT793</td>
<td>Literature and Media</td>
</tr>
<tr>
<td>AT794</td>
<td>Sociology</td>
</tr>
<tr>
<td>AT795</td>
<td>Law in Society</td>
</tr>
<tr>
<td>AT796</td>
<td>Technology and Society</td>
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<tr>
<td>AT797</td>
<td>Archaeology</td>
</tr>
<tr>
<td>AT798</td>
<td>Philosophy</td>
</tr>
</tbody>
</table>

Details of these and other possible electives are available from the Department of Liberal Studies.

Psychology

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 combines subjects previously offered as Psychology 1 and Introduction to Design and Measurement. Students intending to major in psychology 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 AY201 Psychology 201 and AY200 Psychology 200, it is required that SM278 Design and Measurement 2A be taken by students wishing to major in psychology. SM279 Design and Measurement 2B may also be taken by those students with special interests or aptitudes in psychological research, or who intend to complete postgraduate studies in psychology.

In stage three, subjects are offered in organisational and applied social psychology, together with the psychology of personality and personality adjustment. In addition, core studies in methodological analysis, introduction to psychometrics, and interviewing and counselling are offered. Subjects comprising stage three of the psychology degree major are required to take AY301 and either AY300 or AY302 in the first semester, followed by AY304 and either AY303 or AY305 in second semester.

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 in 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 is 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 first semester of their course. The double major includes AY100, AY101, AY200, AY201, SM278, SM279 and all six of the stage three subjects in psychology which are listed above, plus an additional stage three psychology subject and an additional stage two subject chosen from a group of approved subjects nominated by the Department of Psychology.

Many people take up a career related to psychology after completion of a three-year program, but some choose to work as psychologists. In order to be regarded as a professionally trained psychologist in Australia it is becoming increasingly necessary to be eligible for membership of the Australian Psychological Society (APsS). The minimum academic requirement for associate membership of the APsS is completion of an approved four-year program of psychological study. The Swinburne Bachelor of Arts psychology major has APsS approval as a sequence of three years' study and, to become eligible for associate membership in the APsS, graduates must then complete an approved fourth-year course. (A list of approved courses is published in each volume of the APsS journal Australian Psychologist.) The Swinburne Graduate Diploma in Applied Social Psychology is an accredited fourth-year course.

Subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AY100</td>
<td>Psychology 100</td>
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<tr>
<td>AY101</td>
<td>Psychology 101</td>
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<tr>
<td>SM278</td>
<td>Design and Measurement 2A</td>
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</tr>
<tr>
<td>SM279</td>
<td>Design and Measurement 2B</td>
<td>1</td>
</tr>
<tr>
<td>SP250</td>
<td>Psychophysiology A</td>
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</tr>
<tr>
<td>SP261</td>
<td>Psychophysiology B</td>
<td>1</td>
</tr>
</tbody>
</table>
Subject details

Stage one

AY100  Psychology 100
Five hours per week daytime or
Four hours per week evenings
Prerequisite, nil
Assessment is based on essays, practical exercises and class tests

AY101  Psychology 101
Five hours per week daytime or
Four hours per week evenings
Prerequisite, AY100
Topics covered in this subject include the development of behaviour, the psychology of personality, problems in living, human abilities, and social applications of psychology. The design and analysis of experimental studies again forms a major part of the teaching program.

Stage two

AY200  Psychology 200
(Developmental psychology)
Five hours per week daytime or
Three-and-a-half hours per week evenings
Prerequisite, AY100
Assessment is based on an essay, practical exercises and class tests

It should be noted that SM278 must be taken by students wishing to major in psychology. SM279 may also be taken by those students with special interests or aptitudes in psychological research or who intend to complete postgraduate studies in psychology. This is a subject in development 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.

Preliminary reading

Note:
For details of the subjects SM278, Design and Measurement 2A and SM279, Design and Measurement 2B, please refer to the section entitled 'Subjects offered by other faculties'.

AY201  Psychology 201
(Social psychology)
Five hours per week daytime or
Three-and-a-half hours per week evenings
Prerequisite, AY100 and AY101
Assessment is continuous

This subject is about the scientific study of the personal and situational factors that affect individual social behaviour. 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

Stage three

AY300  Psychology 300
(Organisational psychology)
Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work and class tests

Working on the premise of open system theory, this subject concentrates on ways of explaining and understanding the behaviour of people who are part of an organisation.

Important dimensions of behaviour in organisations are examined to provide perspective for studying the psychological well-being of individuals within a variety of organisational settings.

Inter and intra-personal influences: motivational, perceptual, communicational, interpersonal relationships, leadership and authority.
Consequences: vocational choice, entry and maintenance; industrial relations and well-being.

Laboratory sessions are devoted to the process and procedures that allow effective assessment of behaviour in particular organisational contexts.

Reference

AY301  Psychology 301
(Methods and measures)
Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on submissions from laboratory exercises

This subject is divided into two parts. The first part emphasises the critical evaluation of psychological research as reported in the literature. The second part is concerned with the construction, development and application of various types of psychological tests and scales.

References
Aiken, L.R. Psychological Testing and Assessment. 5th edn, Boston, Allyn and Bacon, 1985

AY302  Psychology 302
(Psychology of personality)
Four hours per week
Prerequisites, AY200 and AY201 and SM278
Assessment is based on project work and a class test

The distinct focus of this subject is the behaviour and experience of the individual as a whole person. Attention is given to other specialised fields of psychology (e.g. development, perception, learning and cognitive processes). The theories and research findings from these fields are specifically considered from the viewpoint of integrating such contributions to increase our overall understanding of ourselves and others as persons.

The course involves five components:
(i) basic concepts and influential theories;
(ii) assessing and understanding persons;
(iii) current issues in theory and research;
(iv) research methods; and
(v) applications.
Students are expected to familiarise themselves with major historical theories through preliminary reading. An overview of these influential theories will be given in lectures.

**Preliminary reading**

**AY303 Psychology 303**
(Psychology of adjustment)
Four hours per week
Prerequisites. AY200, AY201 and SM278
Assessment is based on an essay, practical exercises and class tests.

In this subject, the concepts of adult development and adjustment and related theoretical, social and ethical issues, are examined. Some critical periods of human life are selected for study; periods which require major changes in coping behaviour. Included are: changes and adjustments in adolescence and adulthood in particular. More especially the subject is about:
(a) the concepts of adjustment and maladjustment, normality and abnormality, coping and adaptation — cultural relativism — ethical and moral issues pertaining to these concepts;
(b) theoretical views of 'stress' and 'coping' process — the need to consider the individual in interaction with the environment;
(c) development in adolescence and adulthood, specific 'coping' problems, developmental crisis points and transitions; and
(d) psychological and psycho-social changes associated with ageing.

**Preliminary reading**
Lazarus, R.S. Patterns of Adjustment. N.Y., McGraw-Hill, 1976

**AY304 Psychology 304**
(Counselling and interviewing)
Three hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is based on project work.

The major orientations to counselling and interviewing are introduced. The basic interpersonal skills involved in interviewing are examined and the opportunity is provided to develop these. Students will be able to follow particular interests in topics relevant to counselling and interviewing.

**Preliminary reading**

**AY305 Psychology 305**
(Applied social psychology)
Four hours per week
Prerequisites, AY200, AY201 and SM278
Assessment is continuous.

This subject is related to issues of current interest and real life relevance to which social psychologists are being asked to contribute. The emphasis is on use and relevance of social psychological methods and explanations in the study of social issues.

Students complete a project within a general topic area, such as the influence of environment on individual behaviour. Several weeks are set aside for experimental work, to allow students to become familiar with some of the scientific methods and techniques in psychology, ethics and moral issues pertaining to these concepts.

**AY306 Psychology 306**
(Psychology of human performance)
Four hours per week
Prerequisites. AY200 and AY201 SM278 and SM279
Assessment: reading assignments, seminar participation.

Assessment is based on the mental status examination. Students are asked to contribute. The political studies area allows a critical and evaluative view of the whole structure of our society in the late twentieth century. By focusing on Australian society and, at the same time, providing a variety of perspectives on Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our relationships with Asian neighbours.

**AY307 Psychology 307**
(Psychological practice)
Four hours per week
Prerequisites, AY200 and AY201 SM278 and SM279
Assessment is based on project work and seminar participation.

In this subject, the concepts of adult development and adjustment and related theoretical, social and ethical issues, are examined. Some critical periods of human life are selected for study; periods which require major changes in coping behaviour. Included are: changes and adjustments in adolescence and adulthood in particular. More specifically the subject is about:
(a) the concepts of adjustment and maladjustment, normality and abnormality, coping and adaptation — cultural relativism — ethical and moral issues pertaining to these concepts;
(b) theoretical views of 'stress' and 'coping' process — the need to consider the individual in interaction with the environment;
(c) development in adolescence and adulthood, specific 'coping' problems, developmental crisis points and transitions; and
(d) psychological and psycho-social changes associated with ageing.

**AY307 Psychology 307**
(Psychological practice)
Four hours per week
Prerequisites, AY200 and AY201 SM278 and SM279
Assessment is based on an essay, project work and seminar participation.

Intended for students who plan to work as psychologists, this subject provides a review of aspects of psychological practice. Issues relevant to the practising psychologist are considered, including professional ethics and psycho-legal aspects of practice. Students consider the relevant legislation governing the practice of psychology and mental health matters in Victoria. Students also explore intervention techniques used by psychologists, either in organisational settings, or in dealing with individuals.

**References**

### Political Studies
Political studies are 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 added emphasis on Australia e.g. AP101, AP104, AP200, AP201, AP300, AP301, AP303 and AP308.
(b) political economy of capitalist development with examples from Third World and industrialised societies e.g. AP106, AP109, AP110, AP202 and AP307.
(c) political economy of capitalist development with examples from Third World and industrialised societies e.g. AP106, AP109, AP110, AP202 and AP307.

The political studies area allows a critical and evaluative view of the whole structure of our society in the late twentieth century. By focusing on Australian society and, at the same time, providing a variety of perspectives on Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our relationships with Asian neighbours.
Students may take single semester subjects, a minor, a major, a minor, or a double major in political studies.

A minor consists of at least one semester subject at stage one and at least two semester subjects at stage two.

A degree major consists of at least one semester subject at stage one, at least two semester subjects at stage two and four semester subjects at stage three.

A double major consists of at least two semester subjects at stage one, at least four semester subjects at stage two and eight semester subjects at stage three.

In stage one students may enrol in one or more of the seven subjects offered, but two stage one political studies subjects are required as prerequisites for four or more stage two subjects.

The subject AP102 is offered at stage one only and cannot form part of a major or minor in political studies.

### Subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Unit value</th>
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<tr>
<td>AP100</td>
<td>Australian Politics</td>
<td>1</td>
</tr>
<tr>
<td>AP101</td>
<td>Foundations of Modern Politics</td>
<td>1</td>
</tr>
<tr>
<td>AP102</td>
<td>Law and Society</td>
<td>1</td>
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<tr>
<td>AP103</td>
<td>Foundations of the Third World</td>
<td>1</td>
</tr>
<tr>
<td>AP104</td>
<td>Australia and South-East Asia</td>
<td>1</td>
</tr>
<tr>
<td>AP105</td>
<td>Contemporary South-East Asian History</td>
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<tr>
<td>AP106</td>
<td>Australia and the World Economy</td>
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<td>AP107</td>
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<tr>
<td>AP108</td>
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<td>BS117</td>
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<td>AP200</td>
<td>Advanced Australian Politics</td>
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<td>AP201</td>
<td>Political Sociology</td>
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<tr>
<td>AP202</td>
<td>Europe, Capitalism and the Third World</td>
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<tr>
<td>AP203</td>
<td>Socialism and Development in China</td>
<td>1</td>
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<tr>
<td>AP204</td>
<td>Modern Japan</td>
<td>1</td>
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<tr>
<td>AP205</td>
<td>History of Modern China</td>
<td>1</td>
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<tr>
<td>AP300</td>
<td>Public Policy in Australia</td>
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<td>AP301</td>
<td>Communications Policy and the Information Society</td>
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<td>AP303</td>
<td>Politics of the USSR</td>
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<td>AP304</td>
<td>Japan in Asia</td>
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<td>AP305</td>
<td>Capitalism and Uneven Development: India</td>
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<td>AP307</td>
<td>Seminar in Political Studies</td>
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<td>Chinese Politics A</td>
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</tr>
<tr>
<td>AP309</td>
<td>Chinese Politics B</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: Offered in 1986*

This subject may be taken as an option. For details see under ‘Subjects offered by other faculties’.

### Subject details

#### Stage one

**AP100 Australian Politics**

Four hours per week daytime

or

Three hours per week evening

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 constitutional basis, federalism, and the Westminster system, parliament, cabinet and the public service, the organisation of the main political parties, and the role and future of minor political parties. These topics are taught at a level which presumes no previous knowledge of Australian politics. However, as the subject progresses students are introduced to the broader dimensions of politics which include the role of pressure groups, their basis of support, in the electorate and in society at large, and their bearing on Australian democracy.

**Preliminary reading**

Forell, C.R. How We Are Governed. 9th edn, Melb., Longman Cheshire, 1989

or

Jaensch, D. An Introduction to Australian Politics. 2nd edn, Melb., Longman Cheshire, 1984

**AP101 Foundations of Modern Politics**

Four hours per week daytime

or

Three hours per week evening

Prerequisite, nil

Assessment is by class work and essays

This subject is an historical introduction to the major political movements that have shaped Europe in the 20th Century. The focus is on the interaction of social and political factors, the role of the nation-state, democracy and imperialism in the 19th century, but concentrates mainly on the period since 1914. It examines the rise of Soviet communism, the rise of Nazism in Germany and the origins of the two World Wars and the Cold War.

**References**


**AP102 Law and Society**

(This subject is not being offered in 1996)

Four hours per week daytime

or

Three hours per week evening

Prerequisite, nil

This subject cannot be chosen as the basis for a major or minor in political studies

Assessment is continuous

The objective in this subject is to explore 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. Implicit within this is the role and performance of law enforcement agencies in a modern democratic society.

The question ‘For whose benefit does the law exist?’ provides a good starting point.

**Preliminary reading**


**AP103 Foundations of the Third World**

(This subject is not being offered in 1996)

Four hours per week daytime

or

Three hours per week evening

Prerequisite, nil, but students would be assisted by AP106 Assessment is by essays and tutorial participation

What has produced the condition of underdevelopment in the ‘Third World’? What lies beneath the surface of the poverty that plagues much of the world’s population? These questions are considered in the context of the emergence of capitalism, European colonisation, and the making of a world economy.

Specific topics include the social origins of capitalism, the Industrial Revolution, the impact of European intrusions, cities and colonial economies.

**Reference**


**AP104 Australia and South-East Asia**

(This subject cannot be taken by students who have passed AT147 Modern South-East Asia)

Four hours per week daytime

or

Three hours per week evening

Prerequisite, nil

Assessment is by papers and tutorial participation

Australia’s involvement with her neighbours in south-east Asia since 1945 is examined against the background of the crisis within and the disputes between, the countries of the region. Topics considered include studies of communist parties, colonialism, political violence, authoritarian, and military rule; student activism in Indonesia, Malaysia, Vietnam, Kampuchea; and Australia’s relationships with south-east Asia.

Reading guides are distributed.
In this historical introduction to south-east Asia, emphasis is placed on the study of social and political change in Indonesia, Malaysia and Indochina. Case studies include Chinese and Indian political, economic and cultural influences on south-east Asia; peasant societies; the impact of European colonialism on the rise of nationalist movements; and the Japanese occupation and the subsequent struggles for independence.

Reference

This subject examines Australia's position within the contemporary world economy and raises some central issues facing Australians, namely: (i) the loss of jobs in manufacturing industry and its restructuring; (ii) how foreign companies capture high technology opportunities; and (iii) increasing economic integration of Australia into the Asian Pacific region. The theme of the subject is social justice and includes topics on transnational corporations and food, Australian foreign aid: export-based industrialisation in south-east Asia; foreign capital and the Australian economy; and the role of community action groups.

Textbooks
McCoy, A.W. Priests on Trial. Ringwood, Penguin, 1984

In this subject, key aspects of the relationship between politics and society are examined. It is an introduction to the theme of power and its exercise. Its main objective is to provide students with the basic skills necessary to identify and understand major forms of power, which they can apply to their immediate environment or to the broader dimensions of society.

Topics to be considered include the historical background to political sociology; classic views about the nature of human beings and society; an analysis of the concepts of power, authority and influence, with reference to Max Weber; the problem of locating power in modern society and an examination of three theories of power and society, namely Marxist, elitist and pluralist theories; the definition of democracy and the debate about its various models.

Preliminary reading
Dowse, R.E. and Hughes, J.A. Political Sociology. Lond., John Wiley and Sons, 1972, ch. 1

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 proletarianism, 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
**AP203 Socialism and Development in China (1949-1979)**

Four hours per week daytime

Or

Three hours per week evening

Prerequisite: any stage one political studies subject or an approved equivalent

Assessment is continuous

After liberation in 1949, China began a program of centrally-planned, socialist, agricultural and industrial development. Today no one can deny the general success of that program in materially raising the welfare of the Chinese people. The course examines the origins of the policies and the development of the strategies that have led to both self-generated economic growth and greater distributive justice in the People's Republic of China.

Reference


**AP204 Modern Japan**

Four hours per week daytime

Or

Three hours per week evening

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 reflected in the nature of Japan's modernisation, the consequences of her emergence as a world power, her defeat, and re-emergence as an economic power. An examination of the social configuration of Japanese society will shed light on what are claimed to be the characteristic features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operations and employer-employee relations.

Preliminary Reading


**AP205 History of Modern China**

(This subject cannot be taken by students who have passed AT246 The Chinese Revolution)

Four hours per week daytime

Or

Three hours per week evening

Prerequisite: any stage one political studies subject or an approved equivalent

Assessment is by papers and tutorial participation

This subject is concerned with developing some understanding of modern China. Peasant movements and the impact of western influence on the disintegration of China are taken into account. Special emphasis is placed on cultural, social and institutional change in twentieth century China with some examination of contemporary Chinese society.

Textbooks


Meisner, M. Mao's China. N.Y., Macmillan, 1979

Reference

Gu Hua. A Small Town Called Hibiscus. Peking, Panda Paperbacks, 1983

**Stage three**

**AP300 Public Policy in Australia**

Four 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 and in particular, his consensus approach to the formation of economic policy.

**Faculty of Arts**

The role of the bureaucracy is discussed and the adequacy of the structural reforms embarked upon by the Labor Government evaluated. Of central concern are the challenges 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.

**Recommended reading**


**AP301 Communications Policy and the Information Society**

Four hours per week

Prerequisites: two stage two political studies subjects

Assessment is continuous

This subject takes up the theme of information technology and the information society. It looks at the microelectronic revolution and the merging of computer communication with telecommunications, and examines the policy implications both domestically and internationally.

The national telecommunications policy structure is examined and some recent developments and issues raised: the establishment of a domestic satellite system, the development of videotex and other information and data services, the recent inquiry into Telecom, the issue of deregulation and privatisation of telecommunications services and the direction of policy under a Labor Government. Some related issues such as high technology ‘sunrise’ industries for Australia are raised also.

At the international level the policy structure is examined; in particular, the role of the International Telecommunications Union (ITU), the World Administrative Radio Conference (WARC), the International Telecommunications Satellite organisation (INTELSAT), the European Committee on Post and Telecommunications (CEPT), and similar regional bodies. The key issue covered is to be the debate over the New World Information Order (NWIO).

Also examined is the challenge to the international telecommunications order by the emergence of new services such as teletext facsimile and by private corporate telecommunication systems such as IBM’s Satellite Business System (SBS). As well, the roles of American, Japanese and European Transnational Corporations in the development of new equipment and systems, in particular information technology and hence the information society are discussed. Two different approaches to the development of an information society are considered.

The planned approach with public ownership of information technology and systems such as the French ‘Telematique’ program, or the free market, deregulatory approach of the United States Federal Communications Commission.

Finally a look at some of the broader issues associated with the emergence of an Information Society such as teleshopping, teleferencing, telemedicine, ie. the ‘electronic’ home and ‘electronic’ office.

**Recommended reading**

Davidson, Report of the Inquiry into Telecommunications Services in Australia, Vols. 1 and 2. AGPS, Canberra, 1982


**AP303 Politics of the USSR**

Four 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 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 framework is examined, together with the economic and social transformation of the USSR, and the problems encountered by ‘developed socialism’ in the USSR.

**Recommended reading**

Lane, D. Politics and Society in the USSR. 2nd edn, Lond., Martin Robertson, 1979


Novy, A. An Economic History of the USSR. Harmondsworth, Penguin, 1972

**AP304 Japan in Asia**

Four hours per week

Prerequisites, two stage two political studies subjects

Assessment is by seminar participation and papers

A study of Japan’s involvement in south-east Asia or east Asia since 1952. The relationships between Japan and south-east Asian countries are examined against a background of the problems raised in AP106 and AP103 and in comparison to those discussed in AP307. Discussion centres around the consequences of dependency and the degree of complementarity in those relationships.

An alternative course examines Japan’s relationships with Taiwan, North Korea, South Korea, the People’s Republic of China and the USSR. Students are expected to investigate Japan’s relationship with one state and to contribute to discussions of the implications and consequences of Japan’s policies in east Asia.

**AP307 Capitalism and Uneven Development: India**

Four hours per week

Prerequisites, two stage two political studies subjects

Assessment is continuous

Why does a country with an extensive and relatively advanced industrial base also suffer widespread poverty? The subject takes India as a case study of uneven development in the ‘Third World’ and discusses both its historical and contemporary empirical dimensions. It relates the precolonical Indian society to the colonial experience and examines how class formation was affected. Post-independent India is examined in terms of the dominance of particular class interests. Topics include: the development of agriculture, agrarian relations, peasant struggles, industrialisation and technological change.

**Recommended reading**


Mukherjee, R. The Rise and Fall of the East India Company. N.Y., Monthly Review Press, 1974

Omvedt, G. We Will Smash This Prison. Lond., Zed Press, 1980

**AP308 Seminar in Political Studies**

Four 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.

**AP309 Chinese Politics A**

(This subject cannot be taken by students who have passed AP306 Comparative Politics: China A)

Four hours per week

Prerequisites, two stage two political studies subjects. AP205 History of Modern China is highly recommended.

Assessment is continuous

The approach is within a general context of economic, political and cultural development that explores the varying problems and issues encountered in the construction of socialism and the issues involved in the discussion over what is a socialist society.

The following are the core topics basic to an understanding of communist political systems, state and party: political control and leadership, political recruitment, communist ideology, socialism, political consciousness and participation, social and economic planning and management, social structure, class and conflict, bureaucracy and elites set within the context of contemporary China.

**Textbooks**


Townsend, J. Politics in China. 2nd edn, Boston, Little Brown, 1976

**Reference**


**AP310 Chinese Politics B**

(This subject cannot be taken by students who have passed AP306 Comparative Politics: China A)

Four hours per week

Prerequisites, two stage two political studies subjects. AP205 History of Modern China and/or AP306 Chinese Politics A are highly recommended.

Assessment is continuous

Students are expected to deal with particular issues in depth as case studies in selected areas: the family, education, health and social welfare, city and rural life, and foreign policy.

**Reference**


**Sociology**

The Sociology course is designed to provide an understanding of the social world. It deals with the individual’s place in society and the social forces shaping the development of self. It also examines the nature of society and investigates social institutions such as the workplace, education and the family. The course covers varieties of social behaviour and considers the basic theoretical perspectives which explain social life. Basic techniques of gathering and interpreting data are also canvassed and students have the opportunity to gain first-hand experience of social research. 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 strongly advised to take AS201 Sociology 2B (Methodology of Social Research) if they intend to pursue degree studies in sociology. Two stage two subjects are required for a major in sociology.

Students may enrol in either AS203 Sociology 2D or AP201 Political Sociology but not both. At stage three, students completing a major must take four out of the six units offered.

For those students intending to pursue a career in applied sociology the Graduate Diploma in Urban Sociology is offered.

**Subjects offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Stage</th>
<th>Subject</th>
<th>Unit value</th>
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<tr>
<td>AS100</td>
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<td>Sociology 1A</td>
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<tr>
<td>AS101</td>
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<td>Urban Sociology</td>
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<tr>
<td>AS301</td>
<td>3</td>
<td>Theory and Practice in Sociology</td>
<td>1</td>
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<td>AS302</td>
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<td>Sociology of Organisations</td>
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<td>3</td>
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<td>AS304</td>
<td>3</td>
<td>Sociology of Minorities</td>
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</tr>
<tr>
<td>AS305</td>
<td>3</td>
<td>Social Research and Policy</td>
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Subject details

Stage one

AS100 Sociology 1A
(Individuals and social groups)
Five hours per week daytime
or
Three and a half hours per week evening
Prerequisite, Nil, but note that AS100 and AS101 are normally taken in the same year.
Assessment consists of essays, project or 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.

Elementary methods of data analysis are taught but no statistical knowledge is assumed. Teaching is mainly by lectures and tutorials, and films and videotapes are used.

Preliminary reading


Reference


AS101 Sociology 1B
(Issues in contemporary Australia)
Five hours per week daytime
or
Three and a half hours per week evening
Prerequisite, AS100 taken in the same year.
Assessment consists of essays, project or examination.

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 subject centres around a selection of topics taken from the following: poverty, unemployment, class structure, racial inequality, industrial sociology, education, families and kinship, urbanisation, and models of capitalist industrial societies.

Elementary methods of data analysis are taught but no statistical knowledge is assumed.

Reference


Stage two

AS200 Sociology 2A
(Social change)
Four hours per week daytime
or
Three hours per week evening
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 is concerned with 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 provide a challenge for testing the relevance of sociological theory, for providing a means of understanding pressing contemporary problems.

Topics covered include sociological theories of social change, technological change, 19th and 20th Century industrial changes, domestic life, literary representations of change, the women’s movement and democratic movement.

Reference


AS201 Sociology 2B
(Methodology of social research)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, AS100 and AS101.
Assessment is continuous and usually based on one class test and assignments, including a major project.

Students intending to major in Sociology are encouraged to enrol for this subject which is offered in second semester.

This subject is designed to provide an understanding of the importance and range of methodologies that link theory with social research practices, and to provide the opportunity for practical experience in research by using different methods and designs.

In this subject, we examine the research process — the importance of ideology and philosophical underpinnings, the crucial role of problem formulation, ethical and logistic considerations and the relationship between research design, explanation and policy implications. 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 qualitative and quantitative strategies. Specific areas covered include social survey research, sampling, scaling, content analysis, critical investigations and other qualitative strategies.

The combination of lectures, tutorials and assessment assignments is integrated so as to link both the theory and practice of research methodologies. Class participation exercises will provide ample opportunity for students to develop their own research interests and strategies.

References


Wadsworth, Y. Do It Yourself Social Research. Victorian Council of Social Services, 1984

AS202 Sociology 2C
(Sociology of deviance and social control)
Four hours per week daytime
or
Three hours per week evening
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 other areas which are important but traditionally under-emphasised by criminologists and sociologists. These include sexism, racism, unemployment, white collar and corporate crime, government corruption and structuralist critiques of society and the legal system. The study of deviant behaviour and social control raises questions about the nature of social order and the use of knowledge and power by decision-makers and social control agents in ways that reinforce the dominance of more powerful groups over the less powerful in society.

The subject is focused on different theoretical perspectives on deviance and the consequent variations in the sorts of problems 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


Wilson, P. and Braithwaite, J. Two Faces of Deviance. St Lucia, Queensland University Press, 1978

AS203 Sociology 2D
(Political sociology)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, AS100 and AS101 or an approved equivalent.

For description of this subject see AP201 Political Sociology
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 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
Evans, M ed. the woman question. Oxford, Fontana, 1982

AS304 sociology of minority
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessments 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 include Aborigines, non-anglo 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 la Pervanchanee, M. Ethnicity, Class and Gender in Australia. Sydney, G. Allen & Unwin, 1984
Bowker, G. and carrier, J. eds. Race and Ethnic Relations. Holmes and Meier, 1976

AS305 Social research and policy
(This subject is not being offered in 1986)
Four hours per week daytime
or
Three hours per week evening
Prerequisites, two stage two sociology subjects
Assessments continuous

This subject is designed to allow students to refine their understanding of research and research strategies. a critical examination of sociological research in one major area is expressly linked with issues of policy. in the case of medical sociology, for example, the issues of health and health care provision are examined, with a view to providing the basis for understanding the role and significance of government policies pertaining to medical care. Other possible examples include the study of transnational social organisation and social demography. the subject is structured to allow for the possibility of students undertaking either individual or group research projects as part of their required work.
Postgraduate courses

Graduate Diploma in Applied Social Psychology
The graduate diploma program in applied social psychology has been developed to understand social processes, and competence in interpersonal skills and social research methodology. Particular emphasis is placed on the application of psychological knowledge and techniques in social and organisational settings. The course structure provides the opportunity for some students to follow one of two streams within the course; an Applied Social Research stream or a Social Development and Social Influence stream.

Entrance requirements
Applicants must have a degree with a major in psychology, or equivalent, from a recognised university, college or institute. Students lacking an adequate background in social psychology may be required to complete appropriate subjects in the Bachelor of Arts degree course, or, in selected cases, a preliminary reading course, before being accepted for enrolment in a graduate diploma subject. A reasonable standard of statistical competence is required. For the Social Development and Social Influence stream, students are expected to enter the course with some prior studies in counselling and interviewing skills.

Course structure
The course has been designed to be taken by part-time study over two years, or full-time study over one year, but the Social Development and Social Influence stream is available only on a part-time basis. The course comprises eight subjects in all and each subject involves three hours of class meetings per week for one semester. The central theme of this course is skill development and training. Most subjects require preparation of seminar papers as part of the assessment procedure; some subjects include interviewing training, development of information presentation skills, and exercises using computer facilities. In addition, each student is required to undertake an individual research project which involves field work, such as interviewing and to present the result of this investigation in the form of a research thesis. It is customary for a full-time period of three weeks in each year of the course (six weeks for full-time students) to be devoted to practical training in an employment situation.

The part-time course in Social Development and Social Influence
Part-time students take two subjects each semester, and for each of the four semesters there is one subject dealing with theoretical issues and another dealing with skills training and methodology. The study program for part-time students is as follows:

Subjects offered
First year, semester 1
AY401 Research Design and Analysis
AY409 Personality and Social Development
First year, semester 2
AY412 Ethical and Professional Issues
AY410 Assessing Persons and Environments
Second year, semester 1
AY404 Individual and Social Change
Second year, semester 2
AY405 Small Group Processes
AY408 Statistical Analysis Procedures
AY411 Counselling in the Human Services
AY407 Special Applications Option

It should be noted that the Department may offer only AY405 Small Group Processes or AY408 Statistical Analysis Procedures in any one year.

The part-time course in Applied Social Research
Part-time students take two subjects each semester, and for each of the four semesters there is one subject dealing with theoretical issues and another dealing with skills training and methodology. The study program for part-time students is as follows:

Subjects offered
First year, semester 1
AY400 Applied Social Psychology
AY401 Research Design and Analysis
AY412 Ethical and Professional Issues
First year, semester 2
AY403 Quantitative Methods in Social Research
and either
AY404 Individual and Social Change
or
AY405 Small Group Processes
AY408 Statistical Analysis Procedures
Second year, semester 1
AY404 Individual and Social Change
AY405 Small Group Processes
AY408 Statistical Analysis Procedures
Second year, semester 2
AY406 Issues in Social Psychology
AY407 Special Applications Option

It should be noted that the Department may offer only AY405 Small Group Processes or AY408 Statistical Analysis Procedures in any one year.

The full-time course in Applied Social Research
Full-time students will take four subjects each semester. The study program for full-time students is as follows:

Subjects offered
Semester 1
AY400 Applied Social Psychology
AY401 Research Design and Analysis
AY403 Quantitative Methods in Social Research
and either
AY404 Individual and Social Change
or
AY405 Small Group Processes
AY408 Statistical Analysis Procedures
Semester 2
AY412 Ethical and Professional Issues
AY404 Individual and Social Change
AY406 Issues in Social Psychology
AY407 Special Applications Option

It should be noted that the Department may offer only AY405 Small Group Processes or AY408 Statistical Analysis Procedures in any one year.

Progress through the course
Usually the course can be completed in a minimum of two semesters for full-time students, but for all students a maximum of six semesters is allowed for completion of the required eight subjects. A program review committee of the Psychology Department will consider students' progress at the end of each semester.

Applied Social Psychology subject details
AY400 Applied Social Psychology
(This subject is available only to students taking the Applied Social Research stream)

After a review of the current status of social psychology, including major theoretical perspectives, this subject presents students with a broadly-based model of applied social research. It then examines applications of social psychological theories and methods in a variety of areas, for example; opinion or attitude research, law and society, and market research. Visiting lecturers who are currently working as researchers in these areas contribute to the course.

Preliminary reading
AY401  Research Design and Analysis

This subject reviews research designs and tools which are appropriate for the study of social processes, with particular emphasis on social survey techniques and field investigations. The theoretical bases of these techniques are studied, and students are encouraged to explore solutions to the problems of conducting research in a wide social context. Major topics include: sampling, questionnaire construction and use; interview surveys; research planning and objectives.

Students are required to complete two major assignments — a paper on the application of social psychological research methods in the investigation of a particular social phenomenon, and a detailed proposal for their thesis research projects.

Textbooks

AY403  Quantitative Methods in Social Research

(This subject is available only to students taking the Applied Social Research stream)

This subject provides a conceptual framework for understanding multivariate analysis and interpretation of social research data, and an opportunity to become familiar with the use of a range of multivariate techniques. These include analysis of variance and covariance; profile, cluster, factor, discriminant and multiple regression analyses.

Students are taught to use at least two social science computer packages, and are instructed in the basics of computer operation. Assignments involve the use of the computer to analyse data, and then interpretation of trends revealed by the analyses.

Preliminary reading

Textbook

AY404  Individual and Social Change Processes

This subject provides a review and extension of the major areas of social psychological theory and research relating to change; changes which occur as a consequence of events happening in people’s life-space; changes which occur as a consequence of social-science based interventions and human-service programs; and the evaluation and assessment of these programs. The concentration is on theoretical formulations and significant research developments, with emphasis on such topics as attitudes and attitude change, resistance to change, interpersonal influence, adaptations to changed life-situations, and human-service program assessment, monitoring and evaluation.

Preliminary reading
Senate Standing Committee on Social Welfare. Through a Glass Darkly. Canberra, AGPS, 1979

AY405  Small Group Processes

(The subject may not be available every year)

The intention in this subject is to develop students’ skills in those areas of interpersonal processes especially related to applied social psychology: interviewing, group dynamics, communication. The program is organised into three parts:
(i) interviewing skills: training and practice in interviewing for the purposes of obtaining information;
(ii) group processes skills: examining relevant theoretical conceptions of small-group processes and developing skills for working in groups and conducting group interviews;
(iii) communicating in groups: instructions and practice in presenting information and ideas to groups and in using instructional technology such as video.

Preliminary reading

AY406  Issues in Social Psychology

(This subject is available only to students taking the Applied Social Research stream)

There are two components in this subject. The first is made up of two work placements which all students are required to complete. In order to be given a pass in the subject, students must complete these two placements satisfactorily. The second component constitutes a review of conceptual and methodological issues in the practice of applied social psychology. These issues are considered in terms of their implications for the work of the social science practitioner. Students submit a review of a conceptual or methodological framework which is influential in contemporary applied social psychology.

Preliminary reading

AY407  Special Applications Option

This subject allows students to gain research experience by carrying out an individual research study under staff supervision, and by presenting the results of this study in the form of a thesis. The thesis is one of the major requirements of the graduate diploma course, and is assessed by two examiners, one of whom is usually the students’ research supervisor.

AY408  Statistical Analysis Procedures

(This subject may not be offered every year)

The aim in this subject is to develop skills in the use of social science computer software. This subject emphasises actual use of computer systems, and assists students to understand general principles of computer operation so that their skills may be readily adapted for use on a variety of types of computer hardware.

A variety of computer packages is introduced. Students become familiar with the Statistical Package for the Social Sciences, and then they are introduced to another statistical analysis package such as SAS, O8IRIS, P-STAT, or MINITAB.

In addition, students are introduced to concepts of database management as they are used in the social sciences. Students learn to operate data base management procedures using the SIR (Scientific Information Retrieval) software package.

By the end of the semester, students are expected to be able to make informed comparisons of the strengths and weaknesses of the major social science software packages.

References
Students will also be referred to manuals for the computer software packages used in the subject.

AY409  Personality and Social Development

(This subject is available only to students taking the Social Development and Social Influence stream; this subject may not be offered every year)

This subject will survey a range of topical issues of current concern in developmental theory and research. Consideration will be given to theoretical models of social and personal development and change, and to current methodologies which support these models.

Topics will include: orthodoxy and eclecticism in the choice of developmental models; life-span developmental theory; contemporary views on psychodynamic theory and practice, concepts of normality and dysfunction; psychological competence; and issues in applied concepts of personality.

Reference

AY410  Assessing Persons and Environments

(This subject is available only to students taking the Social Development and Social Influence stream; it may not be offered every year)

Beginning with a conceptual framework for the study of psychological assessment, this subject reviews major approaches to the assessment of individuals and their environment. Beginning with an overview of the development of psychological testing, students are introduced to a cross-section of the most commonly used tests and assessment techniques, and then recent developments are reviewed.

Major topics include: test reliability and validity; assessment paradigms and techniques for measuring developmental changes: assessment of personality characteristics; measurement of aptitude and performance; characteristics of environments.

In this subject students gain experience of test administration and interpretation of results. As part of the assessment for the subject, students are expected to complete a detailed review of a major psychological test and its uses.
AY411 Counselling in the Human Services

This subject is designed for students who work, or intend to work, as providers of human services (for example, in fields such as health, education, welfare, personnel and guidance). It is assumed that students have undertaken some previous studies in basic counselling and interviewing, such as that provided by AY304 Counselling and Interviewing. Students who lack an adequate background in basic counselling and interviewing skills may be required to undertake additional preliminary or concurrent studies in this area.

The subject begins with a review of contemporary psychological theory, research and practice in counselling and interviewing, with particular emphasis on the 'social influence' model proposed by Stanley Strong. Various approaches to delivering services are discussed, including the 'people in systems' model proposed by Gerard Egan. The pattern of organisation of some of the human service systems operating in Victoria is examined. The trend towards the use of non-professional staff (such as volunteers) in human services considered, along with various models of training in counselling and interviewing. Overall, the course emphasises the application of concepts related to interpersonal communication, behaviour and experience which have been derived from research in the various specialisations of psychology: social psychology, developmental psychology, cognitive psychology, the psychology of personality, and the psychology of learning.

References

AY412 Ethical and Professional Issues

In this subject, the philosophical, theoretical, ethical and political issues involved in working as a psychologist are examined. Starting with a consideration of the current ethics, attitudes, and value orientations implicit in psychology and in social psychology, a number of areas of concern to the practising social scientist and professional psychologist are explored. Included are questions associated with choice of theoretical perspectives and methodology, use of research results and methods of evaluating proposed research, and working as a member of an interdisciplinary team. There is a detailed examination of the standards of conduct expected of a professional psychologist, and other professional considerations are also reviewed. Students are expected to become familiar with the Code of Professional Conduct and Advice to Members of the Australian Psychological Society.

References

Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on the 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.

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

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


Japanese 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 issues.
security, social problems relating to crime, suicide, gangster organisations, youth violence; dietary life and common diseases; female inequality, and theories on Japanese society. The program is based mainly on newspaper items but some media broadcasts are included and specialist lecturers lead seminars on certain topics. Students have the opportunity to deliver individual oral 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 are 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 placed 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

This subject is divided into two components. In one, additional reading which extends the topics introduced in Japanese Business A is covered. Here the emphasis is placed on the comprehension and active use of grammar structures. In the other component, students are divided into small groups for extra conversation practice.

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-Australia relations, textbook controversy, defence, anti-nuclear movements, administration, government interference, politicians travelling abroad, environmental protection and refugee policy.

AJ407 Japanese Politics B

This subject is divided into two components allowing students to pursue further reading which extends the topics introduced in Japanese Politics A and to develop their conversational skills.

Graduate Diploma in Urban Sociology

This course is designed to supplement students’ general education by providing them with the practical and conceptual skills necessary to work more effectively or secure employment in the fields of planning, community organisation, urban administration and research. More specifically the course is designed to provide knowledge of and experience in:

(a) the analysis of Australian urban development and the social and economic problems that derive from this development;
(b) the formation and characteristics of national, state, and metropolitan policies affecting the urban environment;
(c) the use of techniques and skills relevant to urban research and planning, and policy formulation and evaluation.

Entrance requirements

Applicants must hold a degree or diploma from an approved tertiary institution, including major studies in at least one of sociology, politics, economics, geography, planning or contemporary history. Students with majors in disciplines other than those listed may also be considered.

Course structure

The course entails one year of full-time study or two years’ study part-time, 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 1986:

AS400 Urban Social Theory
AS401 Current Urban Research
AS402 Urban Policy
AS403 Research Report
AS404 Advanced Urban Research
AS405 Metropolitan Decision-making
AS406 Sociology and Planning
AS407 Community Organisation
AS410 Contemporary Issues in Urban Studies
BS465 Urban and Regional Economics

Each student is expected to complete a major 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. AS400, AS401, AS402 and AS403 are compulsory subjects.

Urban Sociology subject details

AS400 Urban Social Theory

This subject is designed to introduce students to the major theoretical perspectives used by social scientists to analyse urban development; to examine the nature of the urbanisation process and related urban problems; and to develop an understanding of the role of the State in urban society.

AS401 Current 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 information sources for Australian urban research and methods of data acquisition; and thirdly, to develop a limited competence with basic research techniques. This involves introductory statistical procedures relevant to urban research, use of Swinburne’s computer facilities, and an introduction to the SPSS (Statistical Package for the Social Sciences) for purposes of data analysis.

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 such as 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. Students can undertake research individually or in small groups, subject to staff approval. The report is one of the major requirements of the graduate diploma course.
AS404  Advanced Urban Research

This subject is offered for those students who want more intensive first-hand training in research methods than that offered in AS401. Students undertake a group research program which involves taking a research issue through from conception to completion of a final report. The research program will involve students in survey design, data collection, interviewing, coding, computing, and research analysis. For students undertaking an empirical analysis in their research projects or for students seeking employment as research officers, this subject provides necessary additional training in urban research.

AS405  Metropolitan Decision-making

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 constraints on decision-making, and decision-making structures. Case studies are used to exemplify ideas and themes.

AS406  Sociology and Planning

In this subject the role of the sociologist in the planning process is examined. While emphasizing the important role of the sociologist in critically examining the values and assumptions underpinning the planning process, this subject is predominantly skills oriented. Particular attention is paid to the techniques of needs surveys, evaluation, social indicators, and secondary data.

AS407  Community Organisation

This subject is concerned with analysing and involving students in community development programs and public participation at the local level. Class discussion focuses on concepts of community, citizen participation and social action 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 and the development of appropriate policy and planning strategies. Issues that might be examined in detail include housing, health care delivery, labour market change, ageing and immigration.

BS465  Urban and Regional Economics

This subject is designed to introduce students to the principles of economic analysis as they apply to the city. Particular attention is given to techniques of economic analysis such as cost benefit analysis, program budgeting, investment analysis and demand forecasting. Topics to which these principles and techniques are applied include housing, transport, and local government.

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 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 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:

SC173  Biology
SC174  Biology

Four hours of theory and practical work per week for two semesters
Prerequisite, nil
Assessment is continuous

The subject provides an introduction to the biological world and a background for subsequent subjects in physiology, biochemistry and biophysics. The course involves an integrated study of cell biology, genetics, microbes, plants and animals, ecology, evolution and an introduction to biochemistry.

Intending students are invited to discuss this subject with the relevant Department of Chemistry staff.

SM171  Mathematics

Five hours per week in first semester
Prerequisite, usually a pass in a Year 12 mathematics subject or its equivalent
Assessment is continuous

A first-year subject which provides a foundation for studies in the theory of numbers, mathematical analysis, geometry and probability theory.

Intending students are invited to discuss this subject with the relevant Department of Mathematics staff.

SM172  Mathematics

Five hours per week in second semester
Prerequisite, SM171
Assessment is continuous

A first-year subject which extends the foundation studies in SM171 to linear algebra, multivariate calculus, geometrical topology and probability distribution theory.

SM271  Mathematics

Five hours per week in first semester
Prerequisites, SM171, SM172 or a tertiary mathematics equivalent
Assessment is continuous

A second-year subject in advanced calculus and the fundamentals of abstract algebra.

Intending students are invited to discuss this subject with the relevant Department of Mathematics staff.

SM272  Mathematics

Five hours per week in second semester
Prerequisite, SM271
Assessment is continuous

A second-year subject involving the study of major branches in geometry and analysis. Topics to be studied are chosen from: projective geometry, Euclidean geometry, co-ordinate geometry, vector space, Hilbert spaces, topology, finite geometries.

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.
SM278 Design and Measurement 2A

Five hours per week daytime
or
Four 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 factorial designs with one and two factors and the associated analysis of variance, correlation coefficients and their applications, and regression analysis with an introduction to multiple regression.

Textbooks

SM279 Design and Measurement 2B

Five hours per week daytime
or
Four 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 included in SM278 are extended and further topics in design and analysis are considered. The SPSS will be used to perform the various statistical analyses.

Topics to be studied include analysis of covariance, factor analysis, discriminant analysis and non-parametric methods.

Textbooks
As for SM278 and in addition:

References

(SP153 and SP154 are multidisciplinary subjects taken as two single semester subjects, either together or separately.)

SP153 Science in Modern Society

Four hours per week during first semester
Prerequisite, nil
Assessment by examination or assignment

and

SP154 Science in Modern Society

Four hours per week during second semester
Prerequisite, nil
Assessment by examination or assignment

The object is to give students an appreciation of various branches of science and the roles science and technology play in modern society.

No formal training in science or mathematics is assumed. Each semester four units are selected and typical units are:

- The atmospheric environment
- Nuclear energy
- Physics and music
- Physics and sport
- Light and colour
- Astronomy
- Science and medicine
- Science and foods
- Aspects of genetics
- Human physiology
- Important chemicals in modern society
- Computers in society
- Aspects of geology

The typical unit is 14 hours of lectures.

Intending students are invited to discuss this subject with the relevant Department of Physics staff.

SP250 Psychophysiology A

Five hours per week during first semester
Prerequisites, AY100 and AY101
Assessment is continuous

and

SP251 Psychophysiology B

Five hours per week during second semester
Prerequisite, SP250
Assessment is continuous

These subjects are designed to familiarise students with human physiological processes, especially 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 autonomic nervous system, cardiovascular system and endocrine system, and includes a study of muscle physiology; major topics also included are: physiological responses to stress, and recording of physiological activity. Psychophysiology B focuses on neuroanatomy and the motor and sensory systems, with particular emphasis on higher cortical function and disorders or cortical functioning.

Textbook

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 (and in the Diploma of Arts course for students who first enrolled prior to 1982). 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 or diploma. The Department of Economics offers a wide range of subjects 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 subjects/units must be taken:

Stage 1
BS111

Stage 2
BS211 and BS213
or
One plus any other selected from: BS214, BS311, BS312, BS315, BS318 or BS319.

Stage 3
Three additional semester subjects from the list immediately above.

For students taking a Bachelor of Arts degree the completed economics major has a unit value of eight. BS111 is a full-year subject with a unit value of two, but most semester subjects taught by the Business Faculty have a unit value of one. However, the three semester subjects taken by a Bachelor of Arts students at stage three level are credited together as having a unit value of four towards the Bachelor of Arts total unit value of twenty-four.

Students who first enrolled prior to 1982 and are taking a Diploma of Arts may also complete an economic major as part of their course. They are required to take the same subjects/units in stages one and two as degree students but in stage three only two additional semester subjects need to be taken. Thus the completed economics major for a Diploma of Arts student has a unit value of seven.

It is important to note that BS111 is a prerequisite for all other economics units offered by the Faculty of Business and that every Arts student taking an economics major must also complete either BS211 or BS213.

BS111 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. 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

BS211 Managerial Economic Analysis
Prerequisite: BS111 Economics

Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their course. This unit involves an analysis of the economic rationale 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 tax systems; analysis of personal and corporate income tax with particular emphasis on the tax unit, the tax base and tax rates; analysis of present sales tax and excise tax; arrange builds and alternatives to these subsidies to commodities and consumers; taxes on the factors of production and schemes to reform the Australian tax system;

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.

BS212 Economic Research
Prerequisite: BS211 Managerial Economic Analysis or BS213 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.

BS213 Industry and Government
Prerequisite: BS111 Economics

Students who are contemplating major studies in economics should include this unit and/or BS211 Managerial Economic Analysis in their course. This unit involves an analysis of the economic rationale 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 tax systems; analysis of personal and corporate income tax with particular emphasis on the tax unit, the tax base and tax rates; analysis of present sales tax and excise tax; arrange builds and alternatives to these subsidies to commodities and consumers; taxes on the factors of production and schemes to reform the Australian tax system;

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.

Course outline

References

BS311 Public Finance
Prerequisite: BS111 Economics

This unit involves an analysis of the economic rationale 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 tax systems; analysis of personal and corporate income tax with particular emphasis on the tax unit, the tax base and tax rates; analysis of present sales tax and excise tax; arrange builds and alternatives to these subsidies to commodities and consumers; taxes on the factors of production and schemes to reform the Australian tax system;

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.

Course outline

References

BS315 Monetary Economics
Prerequisite: BS111 Economics

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.

Course outline

References
BS318  Urban Economics
Prerequisite, BS111 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 the impact of resources development.

References

BS319  International Economics
Prerequisite, BS111 Economics 1

This unit provides a study of international trade and finance 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 investment; international development issues, e.g., economic integration, a new international economic order.

Textbooks
Lindert, P.H. and Kindleberger, C.P. International Economics. 7th edn, Homewood, Ill., Irvin, 1982

References
Industries Assistance Commission, Annual Report Canberra, AGPS, various years

BS117  Macroeconomics

This unit is available to Faculty of Arts students who have completed or are currently attempting AP110 Society and the Economy B and who have not completed BS111 Economics 1, but who wish to undertake certain further studies offered by the Department of Economics. Arts students wishing to do a terminal unit in macroeconomics may also elect to do this unit.

The main objectives of this unit are to extend students' understanding of basic macroeconomics concepts and relationships; to enhance their ability both to explain macroeconomic behaviour within the Australian economy and to predict the outcomes of various macroeconomic policy options.

References

BS465  Urban and Regional Economics

This subject appears in the postgraduate subject details under Urban Sociology.

Other Business subjects offered
See the Faculty of Business Handbook for full details of:
BS103  Accounting 1A
BS109  Accounting 1C
BS108  The Australian Legal System
BS121  Introduction to Data Processing
BS132  Administrative Studies 1
 cursos ofrecidos

Requisitos de admisión

Estándares de progreso

Condiciones de admisión

Premios de la Facultad de Negocios

Programas de licenciatura

Licenciatura en Negocios (BBus)

- Ámbito Contable
- Ámbito de Procesamiento de Datos
- Economía - Ámbito de Marketing
- Unidades obligatorias
- Unidades electivas
- Institutos profesionales

Cursos de conversión de licenciatura en Negocios

Programas de posgrado

Diploma de Graduado en Contabilidad

Diploma de Graduado en Administración de Negocios

Diploma de Graduado en Finanzas Corporativas

Diploma de Graduado en Sistemas de Gestión Corporativa

Diploma de Graduado en Conducta Organizacional

Maestría en Negocios

Detalles de los cursos

Información de la institución de Swinburne

Información general
Faculty of Business

Dean
M.H. Hunter, BCom, DipEd(Melb), MAadmin(Mon), FASA

Faculty Secretary
V. Stiles, BA(Melb)

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G. Watts, BCom, MBA, DipEd(Melb)
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W.D. Wilde, BCom(Brim)

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D.J. Owens, BEc(Hons), MAadmin(Mon)

Lecturers
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M. De Lorenzo, BCom(Hons)(Melb)
M. Freebairn, BAEd, DipED(UWE)
J. Gerstman, BA, BEc(Mon)
S. Holligan, BEc(Hons)(Lat)
J. Watkins, MEC, DipEd(Mon)
E.J. Wilson, BEc(ANU), MEC(Mon)
P.O. Xavier, BEc(Hons)(WAust), MA(Leic), MEC(Mon)
Courses offered in the Faculty of Business

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<thead>
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<th>Course title</th>
<th>Length of course (minimum)</th>
<th>Entrance requirements</th>
<th>Special comments</th>
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<tr>
<td>Bachelor of Business</td>
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<tr>
<td>- Accounting</td>
<td>Full-time: 3 years</td>
<td>Four Group 1 subjects</td>
<td>For the degree</td>
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<td>Part-time: 6 years</td>
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<td>at Year 12</td>
<td>advisable to have</td>
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<td>or equivalent</td>
<td>studied mathematics to at least Year 11 level.</td>
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<td>- Economics - Marketing</td>
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<td>- Data Processing</td>
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<td>Graduate Diploma</td>
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<tr>
<td>- In Accounting</td>
<td>Full-time: 2 years</td>
<td>An appropriate</td>
<td>For the Graduate</td>
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<td>Part-time: 2 years</td>
<td>tertiary degree</td>
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<td>diploma in that field. For the other</td>
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<td>Graduate Diplomas a limited number of places are available for applicants with no formal qualifications but considerable work experience.</td>
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<tr>
<td>- In Business Administration</td>
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<td>- In Management Systems</td>
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<td>- In Organisation Behaviour</td>
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<td>- In Corporate Finance</td>
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<tr>
<td>Degree Conversion Course</td>
<td>Full-time: 1 1/2 years</td>
<td>Diploma of Business</td>
<td>For diploma holders</td>
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<td>Victorian institution</td>
<td>a degree.</td>
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Entrance requirements
The normal entry requirements for the Bachelor of Business are:—

Year 12
Grade D (or better) in four VISE Year 12 Group 1 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.

Group 2 subjects: Will not be recognised as satisfying entrance requirements.

Tertiary Orientation Program
Applicants must have satisfied the requirements of an approved Tertiary Orientation Program at a Victorian technical school or college. 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 Institute of Secondary Education to be the equivalent of either of the above. Such qualifications would include interstate 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. An aptitude test will be required.

Quota
Not all qualified applicants will be accepted because of the limited number of available places.

Applications
Full-time first year: to Victorian Universities Admissions Committee.
Part-time all years: to Swinburne.
Full-time later years: to Swinburne.
Special entry: to Swinburne.

Tertiary Orientation Program
The Tertiary Orientation Program which precedes the first or common year is recognised as a VISE Year 12 equivalent. Details of this program appear in the Swinburne College of TAFE Handbook.

Common year
All undergraduate students follow a common first-year program which consists of introductory studies in accounting, applied economics, administration, data processing, quantitative methods and business law.

Second and third years
In second year students are free to choose between accounting, data processing, 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.

Exemptions
Exemptions may be granted for tertiary subjects studied at another institution; the maximum is six subjects (or twelve units). See the Bachelor of Business, degree course structure for unit values. Applications should be made at the time of enrolment on a form available from the Student Administration Office accompanied by a photostat copy of results achieved in any previous tertiary studies. Students are advised to lodge these applications at the earliest possible moment. The same advice would hold for requests to complete subjects at some institution other than Swinburne.

Notice boards
Information for the benefit of all students is displayed on the notice boards 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.
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 must change to part-time study and may not enrol for second year units in the following calendar year. In order to qualify for return to full-time study these students must pass all of their part-time load otherwise the part-time criteria listed (2) will apply.
      (iii) Students passing the equivalent of 4 units or less will be excluded unless they can show cause why they should not be excluded from the faculty (see 4).
   Note: Students with exemptions from common year units will have these criteria applied on a pro-rata basis.

   (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 or are concurrently completing all outstanding common year units. When a student is enrolled for both common year subjects and second year units, the common year subjects 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) A Chairman plus 2 members of the academic staff nominated by Faculty Board.
      (ii) A student representative selected by the Chairman 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 Faculty Secretary 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.

Conditions of enrolment: number of units
   (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 wishing to enrol for more than 4 (full-timers) or 2 (part-timers) units should refer to the Faculty Secretary.

Students seeking to do one extra unit will be assessed on the basis of their previous record, students wishing to do 2 extra units must apply in writing to the Dean for permission.

Withdrawal 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 1986, Friday 11 April and 5 September), 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 (4), 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 first discuss the difficulties with the tutors concerned.

Requests to complete subjects away from Swinburne
These should be lodged with the Faculty Secretary before enrolling in those units at another institution.

General
   (a) Part-time students
      Part-time students will derive considerable benefit from being able to attend daytime classes for at least one unit per semester; they are encouraged to approach their employers for day release for this purpose.

   (b) Full-time students
      Full-time students have about four hours each week for lectures and tutorials in each subject.
Faculty of Business Prizes

Annual awards are made by the following donors:

- The Arthur Andersen and Co Prize: The student with the best aggregate performance in Financial Management and Accounting Theory.
- The Bill Hibble, Arthur Andersen and Co Prize: The best performance in data processing programming unit.
- The Australian Computer Society Prize: The best student in final year data processing practical work.
- 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 Australia Prize: The best student in Corporate Accounting.
- The Butterworths Book Prizes: The top students in Administrative Studies 1, Australian-Legal Systems, Economics 1, and Introduction to Data Processing.
- The Coopers and Lybrand 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 Datec Prizes: The two best students in second year Systems Design.
- The Economic Society of Australia and New Zealand Prize: The best student with a major study in economics.
- The KMG Hungerfords Prize: The best student in Advanced Financial Management.
- The ICI Prize: The best final year Data Processing student.
- The LOGICA Foresight Prize: The best performance in Quantitative Management Techniques.
- Mobil Oil Aust Ltd Prize: The best written presentation in Marketing Management 2.
- Mobil Oil Aust Ltd Prize: The best overall student completing the Graduate Diploma in Organisation Behaviour.
- The National Mutual Prize: The best student in the subject The Organisation.
- The Statewide Prizes: The best second year students in Accounting, Data Processing, and Economics/Marketing.
- Swinburne Graduate Society of Business Administration Prize: Best overall student in the Graduate Diploma in Business Administration.
- The Touche Ross and Co 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 following prize is presented by Swinburne Institute of Technology: T.W. Higgins Prize: The best graduating student in the degree of Bachelor of Business.

Bachelor of Business (BBus) courses

The degree course leading to the award of Bachelor of Business offers major studies in accounting, data processing or economics-marketing, and special elective studies in accounting, economics, data processing, the business environment, quantitative methods and law.

Some aspects of the three major streams are as follows:

Accounting stream

This course comprises a major study in accounting, together with the business-related areas of commercial data processing, law, administration, economics and statistics. This diversity of disciplines supports 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 heavy 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, auditing 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 accounting. 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 enables 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 Graduate Diploma in Accounting or the Institute’s professional year).

Data processing stream

Employment opportunities for graduates in data processing are many and varied and the present shortage of trained data processing professionals is a continuing problem in the management of many businesses.

To keep pace with the increasing use of data processing, students cover accounting, economics, the business environment, quantitative methods in some depth, as well as a wide spectrum of data processing topics.

Although a graduate’s first job will probably be in the field of programming, knowledge of other business-oriented disciplines as well as basic training in systems analysis and design will eventually lead to the field of computer systems design or applications systems analysis.

Data processors need to:

(a) understand information systems and their relevance to the organisation in which they operate,
(b) be able to analyse systems to determine information requirements consistent with management objectives and constraints within the organisation,
(c) be able to apply the basic design and programming theories, principles and techniques, involved in the capture, processing, storing, analysing and presentation of information, in an economic and technically feasible manner,
(d) develop an ability to examine new ideas and technical developments critically and to be receptive to innovation,
(e) appreciate some of the social, moral and political attitudes that affect computer applications,
(f) establish a sound working relationship with other members of a data processing installation, to be able to communicate with colleagues who may not have a knowledge of computer techniques.

**Economics-Marketing stream**

Understanding the nature of the economic system is a fundamental requirement for a career in business. The economics-marketing stream consists of major studies in marketing and economics. It applies modern economic and marketing concepts to analysis and decision-making in both the private and public sectors. The course has been designed for students intending to pursue careers in marketing, management and government service. The economics and marketing strands within the course complement each other and provide graduates with a comprehensive and clear understanding of the business environment.

Marketing is an exciting and expanding area in which to work. Dramatic changes in consumer and industrial markets are taking place and this trend is expected to continue. Business firms will be seeking more graduates with a practical understanding of how the market place works.

Economics is a disciplined way of approaching important social and business problems. It is used to investigate issues such as unemployment, inflation, the balance of payments and the role of government policy. Industrial and managerial economics include topics on demand, production, cost and pricing of forms in the modern business environment.

During the course students also undertake complementary studies in business-oriented disciplines such as accounting and law.

Employment prospects are good in a wide range of interesting and challenging fields, including:

- marketing and marketing research
- economic analysis and research
- economic policy evaluation
- administration

Teaching methods adopted in this course emphasise group projects, case studies and the opportunity to work on relevant practical problems.

**Degree course structure**

The course comprises twenty-six units. Ten units are studied in the first or common year.

Sixteen units, ten of which are mandatory, are studied over the second and third years.

The three major streams are:

- **Accounting**
- **Data processing**
- **Economics-Marketing**

Each major stream includes various aspects of other disciplines and all students consult with faculty advisers before planning a course of study which will meet the degree course requirements.

**First year (common)**

- **BS103** Accounting 1A (1 unit)
- **BS104** Accounting 1B (1 unit)
- **BS109** Accounting 1C (1 unit)
- **BS111** Economics 1 (2 units)
- **BS122** Administrative Studies (2 units)
- **BS121** Introduction to Data Processing (1 unit)
- **BS103** The Australian Legal System (1 unit)
- **BS145** Quantitative Analysis for Business (2 units)

*Note:*
The structure of the first year of the course was under review at the time of publication.

**Second and third years**

Full-time students will study four units each semester for four semesters; part-time students, two units each semester for eight semesters.

The mandatory units are listed in their usual order of completion.

**Mandatory units (10)**

**Accounting**
- **BS202** Cost Accounting
- **BS203** Management Accounting
- **BS206** Contract Law
- **BS245** Quantitative Management Techniques
- **BS201** Corporate Accounting
- **BS207** Law of Business Organisations
- **BS228** Business Computer Systems
- **BS306** Taxation
- **BS301** Financial Management
- **BS300** Accounting Theory

**Data Processing**
- **BS225** Commercial Programming A
- **BS202** Cost Accounting
- **BS228** Business Computer Systems
- **BS203** Management Accounting
- **BS226** Commercial Programming B
- **BS257** Systems Design A
- **BS327** Systems Design B
- **BS389** Systems Software A
- **BS330** Systems Software B
- **BS324** Management Information Systems

**Economics-Marketing**
- **BS211** Managerial Economic Analysis
- **BS231** Marketing 1
- **BS216** Accounting for Marketing 1
- **BS213** Industry and Government
- **BS217** Accounting for Marketing 2
- **BS232** Marketing 2
- **BS215** Economic Techniques for Business
- **BS324** Marketing 3A
- **BS234** Marketing and the Law
- **BS312** Economic Research

**Elective units (6)**

Six elective units, other than those already completed as mandatory units, may be chosen from the wide range offered.

Students may choose up to six elective units from the Faculty of Arts without prior approval from Business but may not obtain credit for more than two Arts units at stage 1.

A student wishing to select an elective unit from a faculty other than Arts or Business must seek approval before enrolling.

**Preclusions**

**BS202** Cost Accounting and **BS203** Management Accounting and **BS216/7** 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 major may enrol for **BS216** and **BS217**.

**Disciplines and unit codes**

The number of units offered each year, is governed by demand and the availability of appropriate staff.

**Accounting**
- **BS103** Accounting 1A or **BS104** Accounting 1B (1 unit)
- **BS109** Accounting 1C (1 unit)
- **BS201** Corporate Accounting
- **BS202** Cost Accounting
- **BS203** Management Accounting
- **BS216** Accounting for Marketing 1
- **BS217** Accounting for Marketing 2
- **BS300** Accounting Theory
- **BS301** Financial Management
- **BS302** Advanced Financial Management
- **BS304** Auditing
- **BS306** Taxation
- **BS310** Budgeting
- **BS304** Advanced Financial Accounting
- **BS405** Advanced Auditing
- **BS406** Advanced Taxation
Applied Economics

- BS111: Economics 1 (12 units)
- BS211: Managerial Economic Analysis
- BS213: Industry and Government
- BS214: Industrial Relations
- BS215: Economic Techniques for Business
- BS311: Public Finance
- BS312: Economic Research
- BS315: Monetary Economics
- BS318: Urban Economics
- BS319: International Economics

Data Processing

- BS121: Introduction to Data Processing
- BS225: Commercial Programming A
- BS226: Commercial Programming B
- BS227: Systems Design A
- BS228: Systems Design B
- BS229: Management Information Systems
- BS330: Systems Software A
- BS331: Systems Software B
- BS422: Commercial Programming C

Marketing and Administration

- BS132: Administrative Studies (2 units)
- BS231: Marketing 1
- BS232: Marketing 2
- BS234: Marketing and the Law
- BS235: Organisation Behaviour
- BS236: Business Cases
- BS334: Marketing 3A
- BS335: Marketing 3B
- BS336: Human Resource Management
- BS337: Organisation Design

Law

- BS108: The Australian Legal System
- BS181: Computers and the Law
- BS206: Contract Law
- BS207: Law of Business Organisations
- BS209: Legal Aspects of Commercial Paper
- BS308: Advanced Company Law
- BS309: Law of International Trade

Quantitative

- SM145: Quantitative Analysis for Business (2 units)
- SM221: Applied Statistics 1
- SM222: Applied Statistics 2
- BS242: Linear Programming
- BS243: Computer Programming and Packages
- BS244: Business Forecasting
- BS345: Quantitative Management Techniques
- BS346: Simulation
- BS347: Quantitative Cases

Professional Institutes

Australian Computer Society

Data processing stream graduates are eligible for membership of this society. Other graduates may qualify for membership by choosing appropriate data processing electives.

Australian Society of Accountants

Accounting stream

To be eligible for membership of the various professional institutes, students must complete the following requirements:

Provisional membership — the completion of the degree requirements

Associate membership — the completion of the degree requirements plus Auditing

Data Processing stream

Provisional membership — completion of the degree requirement plus Corporate Accounting

Economics-Marketing stream

Provisional membership — completion of the degree requirements plus

- Business
- Computer Systems
- Corporate Accounting
- Accounting Theory

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:

Mandatory units plus Auditing

Institute of Chartered Secretaries and Administrators

Students who proceed to the Graduate Diploma in Accounting in order to become members of the Institute of Chartered Secretaries and Administrators (ACIS), are advised that a prerequisite for entry to the ACIS is completion of second year economics units BS211 Managerial Economic Analysis.

The Bankers’ Institute of Australasia

The Bankers’ Institute of Australasia grants status of Senior Associate to holders of the Bachelor of Business degree whose course has included:

- Cost Accounting
- Management Accounting
- Contract Law
- Corporate Accounting
- Law of Business Organisations
- Financial Management
- Accounting Theory
- Managerial Economic Analysis
Bachelor of Business conversion course

This is a three-semester (1% year) part-time course for students who have completed the diploma of business course and wish to qualify for a degree. They will be selected on the basis of their diploma results together with a recommendation from the awarding college or institute.

Students who have prior qualifications to the Diploma of Business such as the Diploma of Commerce or the Accountancy Certificate, should upgrade this qualification to the equivalent of the Diploma of Business (Accounting) at an institution other than Swinburne before applying for entry to the degree conversion course.

Course structure

The course comprises six units taken (two per semester) over three semesters. A unit involves four hours per week each semester, in the form of either lectures or classes. Units will be selected from those offered for the degree course.

Each student's program is planned individually at the time of enrolment and the course is flexible enough to cater for a wide variety of choice of subject matter.

Provisions

(1) Students are required to take six units but will be precluded from attempting any units, the subject matter of which has been substantially covered in any previous course.

(2) This provision must be fulfilled before the final semester of the conversion course is undertaken.

Diploma of Business (Accounting) students must pass at least one of the following units:

- BS302 Advanced Financial Management
- BS303 Accounting Theory
- BS310 Budgeting
- BS330 Systems Software A
- BS331 Systems Software B
- BS324 Management Information Systems

Every unit will not be offered every year, but students will be advised of the units available at the time of enrolment.

(3) Students should complete the course in not more than four consecutive semesters. They will only be allowed to suspend or prolong their studies in very special circumstances.

Graduate Diploma courses

Graduate Diploma in Accounting

The graduate diploma course in accounting is designed to provide an opportunity for students who have an undergraduate qualification in accounting and suitable work experience, to pursue an advanced course of study in accounting and to enhance their career opportunities.

The object of the course is:

(1) To assist students to gain a deeper understanding of the theory and practice of accounting in specialised areas of relevance to their employment.

(2) To develop an awareness of current problems and issues in accounting, to develop the ability to evaluate these problems critically and to participate actively in programs aimed at their solution.

(3) To develop further, the students' understanding of the interrelationship between the accountant and other members of the organisation in which they are employed by studying related disciplines such as marketing administration, secretarial practice, economics and operations research.

The program builds on undergraduate studies.

Entrance requirements

(1) Applicants must have an approved tertiary qualification with an adequate accounting content plus at least two years' related work experience.

(2) Diplomates in commerce (pre-1967 course) and other members of The Australian Society of Accountants who have not completed a tertiary course of education over three post-HSC years may be admitted to the course, provided they have relevant work experience.

Revised 1978 course structure

The course comprises eight units, of which, at least four must be selected from Group 1 (including BS651 Current Issues in Accounting). The remaining units may be selected from either Group 1 or Group 2.

This course structure enables a student to either:

(a) Specialise in Management Accounting or External Reporting to satisfy the specialisation criteria of the new Professional Schedule of the Australian Society of Accountants.

(b) Select appropriate units for a more broadly-based course, which would not be recognised by the Australian Society of Accountants.

(c) Study, within either of the above alternatives, the two co-examined units for the Institute of Chartered Secretaries and Administrators (i.e., Secretarial Practice & Procedures; Personnel and General Administration).

Group 1

BS651 Current Issues in Accounting (compulsory unit)
BS652 Profit Planning and Control
BS653 Auditing and EDP
BS654 Contemporary Auditing
BS655 Corporate Taxation
BS656 Taxation Planning
BS658 Quantitative Approaches to Financial Policy
BS659 Investment Analysis
BS672 Systems Analysis
BS677 Management Systems

Group 2

BS464 Accounting Software B
BS583 Marketing Administration 1
BS584 Marketing Administration 2
BS585 Secretarial Practice and Procedures
BS586 Personnel and General Administration
BS588 Administrative Policy
BS689 Management, Organisation and People
BS657 Introductory Computer Accounting
BS751 Research Paper

Specialisations

Students wishing to satisfy the ASA specialisation criteria must complete the following units:—

External Reporting
Current Issues in Accounting
Secretarial Practice and Procedures
Contemporary Auditing
Advanced Corporate Accounting
plus 4 electives

Management Accounting
Current Issues in Accounting
Profit Planning and Control
Quantitative Approaches to Financial Policy
Systems Analysis
Management/organisation and People
Management Systems
plus 2 electives

The range and structure of subject areas should meet the detailed course objectives. The course is designed so that students will be aware of the current problems and issues in accounting, and be able to evaluate and assist in solving these problems. It is a flexible, continually changing unit which keeps abreast of contemporary issues.
The specialised accounting units which make up the remainder of Group 1 are designed to enable students to pursue further studies in these areas.

All Group 1 units are designed to encourage students to master the application of concepts to practical situations. This is achieved by means of a large practical assignment in each Group 1 unit as a part of the students’ assessment.

The range of units in other disciplines listed in Group 2 enables students to develop a greater awareness of the interrelationship between the accountant and other members of the organisation in which they are employed.

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 Accounting students.

1. At least one unit must be passed each semester, until all course work is completed, unless a deferral of study is granted.

2. Students enrolled in BS751 must submit a research paper in the semester following completion of the course work, although an extension of one other semester may be allowed. Students who are granted an extension are required to re-enrol within three weeks of the commencement of the following semester to confirm their candidature, otherwise a fail will be recorded.

Any student who has failed to submit a research paper of the required standard within the specified time, may apply to have the research paper topic reconsidered. If the topic is approved the student will be permitted to re-enrol in the unit.

Professional institutes

Australian Society of Accountants

Students may, by an appropriate selection of units, specialise in Management Accounting or External Reporting to satisfy the criteria for the new professional schedule of the Australian Society of Accountants.

Institute of Chartered Secretaries and Administrators

Students seeking admission to the Institute of Chartered Secretaries and Administrators should contact the Institute about entrance requirements prior to commencing the graduate diploma and must include units BS585 Secretarial Practice and Procedures and BS586 Personnel and General Administration, the co-examined units, in their course of study.

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 of small and medium-sized organisations.

2. An opportunity to examine and practice problem-solving and decision-making in management situations, which should equip students in any type of business organisation with the ability to develop logical and creative approaches to their jobs.

After completion of the program, candidates will have improved their analytical skills and their effectiveness in dealing with managerial responsibilities. Moreover, participants will have a broader outlook, extending beyond their immediate specialist areas.

Entrance requirements

Entrance is open to graduates who hold a degree or diploma or its equivalent. The program is available also to a restricted number of candidates whose position of 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

- BS457 Introduction to Financial Management
- BS461 Economics
- BS581 Administration of Organisational Systems
- BS584 Quantitative Methods
- BS596 Marketing Management 1

Second year

- BS466 Industrial Relations (1½ unit)
- BS582 Administration of Human Resources
- BS585 Financial Structures and Policy
- BS587 Business Policy
- BS596 Marketing Management 2

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, except that students who have successfully completed BS464 Australian Industrial Relations will be exempted from BS466 Industrial Relations. 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, industrial 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.

The unit BS466 Industrial Relations is a half-unit and will be incorporated in the Wednesday evening seminar program.

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
These units are available in the evening for those students who are precluded from more than one first-year unit. Other alternative units are chosen after consultation with members of staff.

The following units may be available in 1986:

- BS651 Current Issues in Accounting
- BS654 Contemporary Auditing*
- BS655 Corporate Taxation
- BS656 Taxation Planning
- BS659 Investment Analysis*
- BS463 Current Issues in Economics*
- BS464 Australian Industrial Relations
- BS672 Systems Analysis
- BS677 Management Systems
- BS586 Secretarial Practice and Procedures
- BS588 Personnel and General Administration

The units marked with an asterisk (*) require students to have completed specific prerequisite studies.

Standards of progress
A sub-committee reviews the results of any candidate who fails to reach a satisfactory standard of progress. The decision rests with this committee as to whether the candidate is to be allowed to continue the course.

Methods of study and instruction
More than one method of instruction is used, so active participation is essential. Participants work in groups or syndicates to encourage cooperative thought. In addition to classroom time, formal syndicate studies are programmed for each week. During these formal sessions ample opportunity arises for questions and discussion centred about case studies or short papers prepared by staff members for analysis.

The nature of the work schedule usually requires participants to engage in further syndicate work of a less formal nature. A residential weekend seminar is held in the second year of the course.

Time-table
Sessions for both first and second year units have been organised on a block system. All unit sessions will be offered on Monday morning between 9.00am and 10.00am and between 10.30am and 12.30pm. In addition, special seminar/syndicate sessions will be scheduled for one evening (normally Wednesday) between 6.00pm and 9.00pm.

The units listed as alternative units are offered on different evenings.

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. Graduates from disciplines other than economics, law, corporate strategy, quantitative methods with the corporate finance core of the course.
2. Students with graduate accounting or business qualifications in which only introductory finance courses were available or chosen.
3. People 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 corporate finance.
- To integrate the associated disciplines encompassed by the corporate finance function (e.g. economics, law, corporate strategy, quantitative methods) with the corporate finance core of the course.
- To improve significantly, specific decision-making and management skills by emphasising the practical application of theoretical concepts developed during the course.

Entrance requirements
The course is intended for graduates and diplomates who have sufficient professional experience to benefit from it. Entrance is also available to a restricted number of mature 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
BS752 Corporate Financial Management 1
BS661 Financial Institutions
Semester 2
BS750 Corporate Financial Management 2
BS664 Legal Aspects of Finance

Second year
Semester 1
BS754 Investment Management
BS663 International Finance and Monetary Theory
Semester 2
BS757 Current Development in Corporate Finance
BS575 Research Project (practical application of concepts and techniques)
or
BS753 Financial Modelling and either BS684

Preclusions
Candidates may be precluded from attempting a unit in the unlikely event that they have recently passed an equivalent unit elsewhere. In such instances candidates may select an elective unit after consultation with appropriate staff members.

Standards of progress
The following should be read in conjunction with 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.’

Time-table
All unit sessions will be held on Mondays and Wednesdays between the hours of 5.30pm and 7.30pm. In addition, occasional evening seminars may be scheduled.

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 six units are compulsory:
- BS672 Systems Analysis and Design (2 units)
- BS674 Current Issues in Systems Design
- BS675 Systems Project Management
- BS677 Management Systems
- BS679 Information Systems Management

**Group 2**
Students must take an approved pair of units from this section:
- BS589 Management Organisation and People
- BS588 Administrative Policy
- BS457 Introduction to Financial Management
- BS552 Financial Structures and Policy
- BS651 Current Issues in Accounting
- BS652 Profit Planning and Control

**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 BS678 Systems Development Project (2 units).

**Extension seminars**
In addition to normal class contact each student is required to attend six three-hour seminars in 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. Data processing personnel progressing past the programmer level into systems analysis and project management.
2. Systems analysts, 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. Those who lack the required entrance experience may be admitted to the course via bridging studies.

The course is available also to a number of carefully selected candidates without tertiary qualifications. These comprise only a small percentage of total enrolments.

Applicants are interviewed prior to acceptance into the course to assess their suitability and to determine from which units they may be precluded.

**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 and analysis of these factors.
2. An opportunity to examine and to practice 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**
- AT693 Psychology and Interpersonal Skills
- BS681 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**
- BS682 Managing Conflict and Change in Organisations
- BS683 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 form a detailed curriculum vitae. A letter of support from the employer is required at the selection interview.

**Progress during the course**
In order to continue in the course, students must maintain a satisfactory standard of progress, but it is expected that most candidates will complete the course with 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.
Master of Business courses

(1) Intending applicants for admission to the degree of Master in the Faculty of Business must contact the Head of the Department in order to discuss appropriate application procedures and requirements.

(2) Applicants must allow 2-3 months for a successful application to be finalised.

(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.

Lecturers

The teaching program is conducted by staff from the faculties of both Business and Arts.

Business subject details

BS103  Accounting 1A

Prerequisite, nil

The unit is divided into three segments.

A basic introduction to accounting concepts, the processing of accounting data and the preparation of financial reports.

The first segment covers the accounting function basic terminology, the accounting equation, and the preparation of a balance sheet and profit and loss statement from a simple ledger system. The second segment introduces the accounting system as a means of providing information for management control and decision-making, and to provide data for the preparation of final reports. The three systems to be looked at are the cash accounts payable and accounts receivable modules of a microcomputer accounting system. Each system is looked at as a stand-alone module and they are then integrated to provide an overall accounting system.

The third segment of the unit includes balance day adjustments and the preparation of final reports. This segment will use the general ledger module of the microcomputer system to record the transactions.

Textbook


References


BS104  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 BS103 — see above.

Textbook


BS108  The Australian Legal System

This unit introduces students to our legal system. The general objectives are:

— to introduce students to basic legal concepts;
— to create an awareness of the interrelationships which exist between the courts and parliament;
— 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.

Textbooks


References

Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979
Caffrey, B. Torts for the Non-Lawyer. Canberra, Signal Books, 1979
Gifford, K. How to Understand an Act of Parliament. 5th edn, Law Book Co., 1982
Howard, C. Australia's Constitution. Syd., Penguin, 1978
Legal Resources Book, Melb., Fitzroy Legal Service, 1979
Pearce, D. Statutory Interpretation. 2nd edn, Melb., Butterworths, 1980
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BS109 Accounting 1C
Prerequisites: BS103 Accounting 1A or BS104 Accounting 1B

Accounting theory and practice are examined in an historical cost accounting system. This unit includes the following topics: revenue and unit expenses; accounts receivable; cost of sales and inventory valuation; assets and depreciation; liabilities; accounting for shareholders equity; performance evaluation; analysis and interpretation and funds statements and cash flow statements.

Textbook

References
Barton, A.D. The Anatomy of Accounting. 3rd edn, St. Lucia, University of Queensland Press, 1984
Martin, C.A. An Introduction to Accounting, Syd., McGraw-Hill, 1983

BS110 Legal Studies

This unit introduces Associate Diploma students to our legal system. The general objectives are:
- to provide an understanding of the nature of law, its historical origin and institutional setting in Australia;
- to provide an understanding of the conventional process of legal reasoning used in the system;
- to create an awareness of the influence of the judiciary in the law-making function and in so doing to detail areas of substantive law.

Textbooks
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979

Equal Opportunities Act 1977
Commercial Clerks Award (No. 1 of 1984)

References

Legal Resources Book. Melb., Fitzroy Legal Service, 1979


Pearce, D. Statutory Interpretation, Melb., Butterworths, 1974


Your Rights, Melb., Vic. Council for Civil Liberties, 1980

BS111 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. 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


BS121 Introduction to Data Processing

This course is an introduction to commercial data processing with an emphasis towards the use of computers in business rather than the technical details of computers. A 4th Generation Language is used to build simple business systems on the faculty's PRIME computer. This unit is currently subject to major review. It will cover:
- computing concepts on a range of equipment;
- data management;
- application systems development;
- programming.

BS122 Data Processing — S

This unit is compulsory for students studying for the Associate Diploma in Private Secretarial Practice and is available only to students in that course.

Topics include: word processing concepts; introduction to computers; introduction to data processing; computer programming; computer packages; word processing systems survey.

References
Current journals including: Modern Office
Rydes

Appropriate software manuals

BS132 Administrative Studies 1

This subject is designed to assist students to attain their full potential in future relationships within the business world. A formal study is made of current theories, concepts and practices relating to the behaviour of people in formal organisations in which essential objectives must be attained within a system of superior—subordinate relationships. In this respect the behaviour of people, having respectively, supervisory and subordinate roles in organisations is dealt with via such themes as:
- the nature and complexity of organisations and their environments,
- individual differences,
- understanding interpersonal relationships and social influences on individual behaviour,
- group dynamics,
- intergroup relations,
- organisational effectiveness,
- the functions of managers in complex organisations,
- the use of conceptual models, especially the Open System model for problem-solving.

In addition, tutorial exercises are used to enable students to experience and to share relationships within constructed situations.

References


Schermerhorn, J.R. Management for Productivity. N.Y., Wiley, 1984

BS181 Computers and the Law

Prerequisite: BS108 The Australian Legal System

Course objectives
The aim of the course is to enable students to explore:
(i) the application of existing law to computer development, manufacture, acquisition and use;
(ii) the law in relation to computer abuse.

Course outline

To meet objective (i) above, students will examine the application to computer technology of existing law and practice, pertaining to:
- patents and copyright;
- negligent manufacture;
- negotiating and concluding contracts for the acquisition, lease or rental of computer resources;
- performance deficiencies involving breach of contract, breach of warranty or misrepresentations;
- output errors or performance malfunctions involving, e.g. defamation or third party economic loss.

Development/Manufacture

Acquisition

Use

Faculty of Business
To meet objective (ii) above, students will examine:
(a) ‘computer crime’, with a view to assessing the adequacy of the present law to meet the challenges inherent in the successful prosecution of computer criminals;
and
(b) the issue 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 also be referred to.

SM145 Quantitative Analysis for Business
A first-year subject in the Faculty of Business common year. For students without a Year 12 mathematics or equivalent, the course is four hours per week for two semesters. For students with an appropriate mathematics background, the average time allocation is three hours per week for two semesters.
The primary purpose of this subject is to bring all students up to a higher level of numeracy and to develop a method of approach which they will be able to apply in subsequent areas of their courses. In doing this, the unit will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures applied in various disciplines of their business studies course.
Application, interpretation and presentation of the results of analysis will form an integral part of the course.
Topics covered will include the following: language and notation; functional relationships; differential calculus including determination of maximum and minimum; partial differentiation; matrix algebra; introductory mathematics of finance; presentation of statistical data; measures of central tendency and dispersion; probability theory and probability distributions; sampling theory and design; statistical inference including estimation, confidence intervals; index numbers; correlation and regression; time series analysis.
Optional enrichment units are offered in a selection of topics which includes inventory, Markov chains, decision theory, input-output analysis, sampling techniques, quality control, and tests of hypotheses.

References

BS201 Corporate Accounting
Prerequisite, BS109 Accounting I C
(a) Unit objectives
The overall unit objective is to develop in students an ability to think through corporate accounting issues and specifically:
— to develop in students an awareness of the financial accounting function within a company.
— to develop students’ problem-solving abilities in the application of the principles of corporate accounting to the solution of practical problems.
— to develop student awareness of contemporary issues in the practice of financial accounting; by reference to actual situations where appropriate.
— to develop students’ independent research skills by the assignment of research areas within the course.
— to develop student awareness of the interrelationship between corporate accounting and corporate law.
(b) The unit covers the following areas:
— share capital and other forms of finance;
— business combinations, including amalgamations, mergers and takeovers;
— group accounting – particular emphasis is on this topic, it includes the preparation of consolidated accounts, equity accounting and joint ventures;
— availability of profits for distribution;
— presentation of financial reports including 7th Schedule and Accounting Standards requirements;
— reconstruction and company liquidation.

Textbooks
Leo, K.J. and Higgott, J.R. Company Accounting in Australia – Reform, N.S.W., Wiley, 1984

BS202 Cost Accounting
Prerequisite, BS109 Accounting I C
A mandatory second-year degree unit for both accounting and data processing streams.
This unit is designed to develop basic costing concepts of product and period cost into an examination of the design and operation of costing systems for inventory measurement and cost control.
Among the topics covered are absorption costing, standard costing, and variable costing systems. The unit also examines aspects of the design of a system of internal control for management applications.

Textbook

BS203 Management Accounting
Prerequisite, BS202 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, an introduction to budgeting (including computerised budgeting), cost volume profit analysis, incremental costing, discounted cash flow techniques, behavioural aspects of accounting, transfer pricing, and performance evaluation and measurement.

Textbooks

BS206 Contract Law
Prerequisite, BS108 The Australian Legal System
The general aim of this unit is to enable students to gain an understanding of the law applicable to bargains or agreements concluded during the course of business. Particular attention is given to the legal repercussions of negotiating and concluding a bargain (including the impact of statute) and breaching obligations undertaken.

Textbooks

References
Caffey, B.A. Guidebook to Contract Law in Australia. 1st edn, Syd., CCH Australia Ltd., 1980
Goods Act 1958 (Victoria)
Goods (Sales and Leases) Act 1981 (Victoria)
Guest, A.G. Chitty on Contracts. 24th edn, Lond., Sweet and Maxwell, 1977
Partnership Act 1958 (Victoria)
Trade Practices Act 1974 (Commonwealth)

BS207 Law of Business Organisations
Prerequisite, students enrolled in this unit will be expected to have passed BS206 Contract Law
This unit is compulsory for students in the accounting program.
The intention here is to undertake a comparative analysis of the form of business organisations.
Essentially this involves an introduction to company law.

Textbooks
Companies Act 1981
Trustee Act 1958

References
Afterman, A.B. and Baxt, R. Cases and Materials on Corporations and Associations. 4th edn, Syd., Butterworths, 1984
Baxt, R. An Introduction to Company Law. 2nd edn, Syd., Law Book Co., 1980
Horsley, M.G. The Law and Administration of Associations in Australia. Syd., Law Book Co., 1977

BS208 Industrial Law
The general objective is to assess the impact of law upon the relationship between employer and employee.
The following matters are analysed in this subject:

- the right to work; the formation of the contract of employment and factors impinging thereon, including discrimination and compulsory unionism;
- the rewards and obligations of work; an analysis of the operation of the Federal Conciliation and Arbitration Commission, the Victorian Industrial Commission and Conciliation and Arbitration Boards, and the legal obligations placed on employers and employees pursuant to common law;
- the work environment; an assessment of the legal and arbitral response to technological change, management prerogatives and worker participation;
- the cessation of work; an analysis of the judicial, legislative and arbitral response to strikes, wrongful and unfair dismissals, and employment-related injuries as examples of temporary or permanent cessation of work.

References
Conciliation and Arbitration Act 1904, as amended (Cth), latest edn, Syd., CCH Australia Ltd.
Guidebook to Australian Industrial Law. 4th edn, Syd., CCH Australia Ltd., 1984
Guidebook to Workers Compensation in Australia. 4th edn, CCH Australia Ltd., 1984
Sykes, E.J. and Yerbury, D. Labour Law in Australia. Syd., Butterworths, 1980
Victoria's Industrial System — The Future. Syd., CCH Australia Ltd., 1978

BS209 Legal Aspects of Commercial Paper
Prerequisite, students enrolled in this unit will be expected to have passed BS206 Contract Law
The objective of the unit is to extend and develop the principles of contract by canvassing such areas as the financing 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 employed credit, security and insurance practices and the consequent need for reform.

Textbooks

References
Bills of Exchange Act 1909 (Commonwealth)
Chattel Securities Act 1981 (Victoria)
Credit Act 1981 (Victoria)
Instruments Act 1958 (Victoria)

BS211 Managerial Economic Analysis
Prerequisite, BS211 Economics I
Students who are contemplating major studies in economics should include this unit in their program of study.

The unit deals with the structure, conduct and performance of industry in Australia. Syd., CCH Australia Ltd., 1985

Textbooks
Davies, J.R. and Hughes, S. Managerial Economics. Plym., U.K., Macdonald and Evans, 1979

References

BS213 Industry and Government
Prerequisite, BS211 Economics I
Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their courses.

The unit deals with the structure, conduct and performance of industry in the Australian economy. By analysing such areas as the financing 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 employed credit, security and insurance practices and the consequent need for reform.

Textbook

References

Faculty of Business
BS210 Industrial Relations
Prerequisite: BS111 Economics 1
This unit provides a study of the Australian industrial relations system with some comparative reference to the systems of other countries. Topics to be studied include:
- nature of industrial relations and an industrial relations system;
- nature, sources and manifestations of industrial conflict;
- the characteristics of the parties to the Australian industrial relations system: trade unions, employers, governments and industrial tribunals;
- decision processes: conciliation and arbitration, collective bargaining, employee participation schemes.

References

BS215 Economic Techniques for Business
Prerequisites: BS111 Economics 1 and SM145: Quantitative Analysis for Business (or an approved equivalent)

Objectives
The aim of this unit is to provide students with some techniques and skills generally used in economic and market research in business. Emphasis is given to the analysis and interpretation of information which graduates are likely to use in practice.

Course outline
- Statistical computing
  - Collection and sources of data
  - Data analysis
  - exploratory data analysis
- Econometric modelling and forecasting
  - simple linear regression models
- Financial modelling and its applications to marketing decisions.

Textbook

References
Australian Bureau of Statistics publications, e.g.: Australian National Accounts, National Income and Expenditure. Canberra, Australia, Annual
Institute of Applied Economic and Social Research, Melbourne University. Australian Economic Review, Quarterly

BS216 Accounting for Marketing
Prerequisite: BS109 Accounting 1C
This unit together with BS217 is a mandatory unit in the economics-marketing stream. They are not available to students taking either the accounting or data processing stream.

The unit is designed to introduce students to the role of management accounting in planning and controlling the marketing function in organisations.

The content includes:
- Business planning and the relationship between the management accounting and marketing functions. The accountant's role in quantifying business objectives. The analysis of costs for planning and decision-making. The use of cost-volume-profit analysis for evaluating business plans.
- Cost classifications and costing systems for determining inventory values and measuring profit. Absorption costing and variable costing. Problems associated with the use of inventoried costs and allocated costs in marketing decisions. Cost concepts relevant to marketing-mix decisions. Cost control, relevant cost concepts and classifications.

Textbook
Shillinglaw, G. Managerial Cost Accounting. 5th edn, Homewood, Ill., Irwin, 1982

References

BS217 Accounting for Marketing 2
Prerequisite: BS216 Accounting for Marketing 1
The object of this unit is to provide students in the economics-marketing stream with an analytical framework and methodology for evaluating marketing decisions.

Working capital management, techniques for optimising the investment in receivables and inventories.
Impact of marketing-mix 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.

Pricing decisions — role of costs and funds invested.
The analysis and reporting of marketing performance, segment reporting, problems posed by joint cost.
Transfer pricing between manufacturing and marketing divisions.

Textbook
Shillinglaw, G. Managerial Cost Accounting. 5th edn, Homewood, Illinois, Irwin, 1982

References

BS225 Commercial Programming A
Prerequisite: BS121 Introduction to Data Processing
In this unit, a knowledge of the fundamentals of program development is presumed, as well as an understanding of basic computer concepts.

The following topics are covered:
- COBOL language features. Form of the language, program layout, data types, arithmetic instructions, input and output instructions, conditional and loop instructions, editing and data manipulations, table handling.
- Program development techniques. The stages leading from the system specification to the coding activity. Problem analysis, Logic aids, e.g. pseudocode and structure charts. Documentation, Program structure. Program design for implementation and maintenance.
- Program writing techniques. Program debugging, program testing, test data generation, diagnostic aids. Program test documentation, coding standards.
- Major programming assignments approach realistic commercial complexity, and include the areas of group reporting, table handling, sequential file updating.

References
Notes are distributed for each topic.

BS226 Commercial Programming B
Prerequisite: BS225 Commercial Programming A
A thorough knowledge of basic programming techniques and an elementary understanding of the COBOL programming language is presumed. Upon completion of this unit, the student will have experi-
enced many aspects of program development and programmer responsibility, in a simulated working environment. Special emphasis is placed on the application of improved programing productivity techniques.

A selection of the following topics is treated by lecture, research assignment, or programming project:
- structured programing; top-down development; development support libraries; team operations; structured walk-through; program documentation aids and standards; program estimating; program testing and debugging; direct access file manipulation; advanced COBOL facilities, such as SORT and Report Writer;
- comparative commercial programing languages (including RPGII, PL/1 and BASIC), query languages and other special purpose languages; job control language and utility program functions; introduction to computer operations.

Students form programming teams for major projects, with the lecturer adopting the role of chief programmer, or consultant. Industry supplied system specifications for actual commercial applications are used whenever possible as the basis for these projects.

References
A detailed reading guide is issued for each topic.
Appropriate manuals from computer manufacturers.
Relevant industry journals.

BS227 Systems Design A
Prerequisite BS226 Business Computer Systems

The aim of this unit is to enable the student to understand and apply techniques of Systems Analysis and Design. At the completion of this unit the student should be able to produce a structured specification and a detailed design specification for a simple computer based system.

Major topics covered are:
- the methodology and techniques of structured analysis and design;
- file design and processing techniques;
- input/output design with an emphasis on screen dialogue techniques.

Hands-on exercises are used wherever possible to reinforce design concepts and techniques such as prototyping.

References

BS228 Business Computer Systems
Prerequisite BS121 Introduction to Data Processing

The intention of this unit is to enable students to understand the development process of corporate information systems and to apply appropriate techniques to develop user systems.

Topics covered:
- corporate information systems versus personal information systems;
- software options: traditional life cycle development versus user driven development, tailored applications, application packages, development tools, professional support tools;
- hardware options: micro, mini, mainframe, distributed processing, local area networks, in-house systems, using outside services;
- communication skills;
- analysis techniques for determining information requirements;
- producing functional specifications;
- supplier evaluation and selection;
- systems implementations: file creation, conversion methods, user responsibilities;
- computer project management;
- effect of an organisation's growth and diversification on its information systems;
- end-user computing: approaches for developing systems, advantages and inherent risks;
- on-going systems evaluation.

A significant component of this unit is laboratory work. Students gain hands-on experience using an accounting package, also software packages for word-processing, data base and spreadsheet applications.

Textbook

References
A detailed reading guide is issued for each topic. The following are most commonly referenced:
Cushing, B.E. Accounting Information Systems and Business Organizations. California, Addison-Wesley, 1982
Journal of Systems Management, Association for Systems Management, Cleveland, Ohio
Klein, R.T. Business Computers — Planning, Selecting and Implementing Your First System. Ohio, Merrill, 1985

BS231 Marketing 1
Prerequisite, nil
Marketing 1 is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams.

Marketing 1 and 2 deal with the fundamentals of business planning with particular emphasis on the market place. The subject has been designed to provide students with an opportunity to relate their knowledge obtained in other disciplines, to business situations.

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 1 deals with the fundamentals of marketing and consumer behaviour. The course provides for a broad understanding of marketing problems and introduces students to the techniques of dealing with such problems.

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 buying process; market segmentation. The marketing 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.

Reference

BS232 Marketing 2
Prerequisite, students enrolled for this unit should have passed BS231 Marketing 1
Marketing 2 is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams

Objectives
- to give students an opportunity to consolidate their Marketing 1 material;
- to develop further, their analytical, creative and communications skills;
- to develop further, the subject matter which is addressed in Marketing 1;
- to develop further, the following specific skills:
  - to introduce the student to the basic principles of marketing research;
  - to develop further, an understanding of the importance of demographic aspects to analyse future market opportunities;
  - to develop an in-depth understanding of various ways of examining consumer behaviour as an input to marketing research and marketing decision-making;
  - to introduce students to the special aspects of industrial marketing and the marketing of services;
  - to develop further, an understanding of the product policy in relation to marketing programs.
— to create an environment where students learn to deal with others (syndicate work) in a problem-solving situation;
— to give students practice in applying marketing theory and the above skills to real-world marketing situations;
— to further develop and improve skills in the writing and verbal presentation of business reports.

**Framework**

Introduction to the market research process; problem definition, research approaches and interpretation of data.

Marketing opportunities in the 1980s: the impact of the family life cycle and demography on expenditure patterns; market location. Consumer behaviour analysis; the industrial buying process, market segmentation, the impact of family social class, peer group and culture.

Quantifying demand, understanding demand determinants, presentation of data.

Derived demand and end-use analysis. Comprehensive cases on consumer, industrial and service marketing.

**Method of instruction**

Similar to that of Marketing 1, but students will be more involved in field work and research.

**References**


Comprehensive handout material will also be given.

**BS234 Marketing and the Law**

Prerequisite: BS108 The Australian Legal System

The unit involves an examination of the legal controls imposed on the manufacturing, retailing, distribution and financing of consumer goods including an examination of the Trade Practices Act 1974.

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; restrictive trade practices.

**Textbooks**


*Goods Act 1958 (Vic)*

Goods (Sales & Leases) Act 1981 (Vic)

*Consumer Affairs Act 1972 (Vic)*


Trade Practices Act 1974 (C'wth)

**References**

An Introduction to Trade Practices and Consumer Protection in Australia. CCH Australia Ltd, 1977


**BS235 Organisational Behaviour**

Prerequisite: BS132 Administrative Studies 1

A second-year unit in the degree course in business.

The principal objective of this unit is to help prepare students for their entry into organisational life, or in the case of part-time students to allow them to better understand their organisational environment.

This is achieved through a detailed study of the psycho-social subsystem of organisations via the use of experiential activities, and the analysis of case studies and films, together with appropriate reading. Students gain an insight into the behaviour of people as individuals and group members within the organisational context and also learn something about themselves.

**Recommended reading**


**Textbooks**


**BS243 Computer Programming and Packages**

Prerequisite: BS121 Introduction to Data Processing

The purpose in this unit is to bring students up to the stage where they can recognise the benefit of, and use a computer to assist in the solution of, business problems.

The emphasis is on the use of microcomputers. Application areas are directed towards topics covered in other degree units.

The unit has both a programming and a packages component.

**Programming**

This component is based on the language BASIC using IBM microcomputers. The aim is to bring students to the stage where they can write programs to perform analytical routines commonly found in business.

Coverage includes:

— input-output procedures;
— structured programming in as far as BASIC allows including statement modifiers;
— method of writing interactive programs including string functions;
— file handling procedures;
— format of a report.

**Packages**

Students are introduced to a variety of packages associated with the subject areas in which they are specialising, e.g. accounting, finance, economics, marketing and statistics.

Students should then be able to:

— use packages confidently;
— evaluate capabilities of packages and select between alternatives available;
— assess when the use of a package is applicable.

**References**

The majority of reference material consists of computer manuals and user guides and current journal articles.

**BS244 Business Forecasting**

The purpose in 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 — the 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 lead/lag indicators;
— qualitative procedures — including the role of market research, delphi methods, consensus, etc. In predicting future behaviour and likely scenarios.

**References**

A detailed list of texts, journal articles and other reference material will be made available during the course.

**BS245 Quantitative Management Techniques**

Prerequisite: SM145 Quantitative Analysis for Business 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.
Emphasis is on the practical solution of specific business problems and in particular on the recognition, formulation and interpretation stages of solution. Areas of study will include:

- the general problem of resource allocation with emphasis on linear programming including an introduction to post-optimal analysis and the determination of transfer prices in a decentralised organisation; 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 an introduction to financial modelling and its applications; development of models using FORESIGHT.

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

References
To be advised during lectures.

BS256 Legal Studies 2
Prerequisite: BS110 Legal Studies

Course objective
To create in secretarial students, an awareness of commercial concepts and documentation relevant to their future employment.

Course content
In meeting the above objective, students are made familiar with a variety of contracts (e.g. sale of goods, provision of services, insurance, loans, employment), and security documents (e.g. land and chattel mortgages).

References
Teaching materials in the form of actual documents are distributed to students and their form and content explained by reference to existing law. Recourse to textbooks is made in the context of solving enquiries arising from real-world documentation.


BS281 Administrative Studies 2 (Human Behaviour in Organisations)
Prerequisite: BS132 Administrative Studies 1

This one-semester unit is primarily concerned with the general problem of resource allocation with emphasis on linear programming including an introduction to post-optimal analysis and the determination of transfer prices in a decentralised organisation; 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 an introduction to financial modelling and its applications; development of models using FORESIGHT.

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

BS282 Administrative Studies 2 (Secretarial Administration)

This one-semester unit provides potential private secretaries with an understanding of:

- the nature, objectives and characteristics of the business organisation and its environment;
- the functional activities of, and problems associated with, the general, financial, personnel, production, marketing and data processing managers and the company secretary.

The teaching method is based on a combination of lectures, case-studies, tutorial papers and class discussions.

Particular attention is given to the duties of a secretary in each of the above areas.

Recommended reading


BS291 Private Secretarial Practice B

A two-year subject requiring the practical application of more advanced stenographic skills. Minimum shorthand dictation speeds are 100 wpm, and opportunity is available for students to reach 120 wpm, thereby gaining credit for the increased speed. A minimum accurate typing speed of 55 wpm is required, with corresponding ability in the preparation of typewritten transcripts from dictated material. Regular assignments given on secretarial knowlege and duties. Continuous assessment throughout the year.

Textbooks
Complete booklist available upon enrolment.

AT295 Business Communications
Prerequisite, nil

A year-long unit designed principally for students of Private Secretarial Practice, to assist them in the preparation of letters, memos and other business documents; to improve their knowledge and understanding of the English language; and to facilitate generally, communications between persons or groups within the business structure.

Textbooks
Lists available on enrolment.

SM221 Applied Statistics 1
Prerequisites, SM145 Quantitative Analysis for Business and BS111 Economics 1

This unit is designed to develop a student's ability to carry out statistical analyses relevant to the social sciences. Particular emphasis is given to the application of statistical techniques in the areas of business, economics and market research. The unit provides a balance between theory and practice and includes a wide variety of statistical techniques. Emphasis is given to the realities of statistical practice including the development of communication skills.

Topics include:
- data handling; exploratory data analysis including data transformations; estimation; collection of data including sampling techniques; data sources with particular emphasis on official collections of the Australian Bureau of Statistics; statistical computing including an introduction to SPSS;
- demographics; rates and ratios; The Life Table; population estimates and projections;
- experimental design; designs for comparing two populations; hypothesis testing using parametric and non-parametric methods. Product testing;
- regression; linear regression model, coefficient of determination, prediction and forecasting; multiple regression model.

Textbook

References
Miller, S. Experimental Design and Statistics. Lond., Methuen, 1975
Munro, M.J. SPSSX Users' Guide. N.Y., McGraw-Hill, 1983

SM222 Applied Statistics 2
Prerequisite, SM221 Applied Statistics 1

This unit extends a student's knowledge of the theory and practice of statistics with an emphasis on practical realises of statistical analysis of commercial production, sales and marketing of goods and services. Emphasis is on the practical solution of specific business problems and in particular on the recognition, formulation and interpretation stages of solution. Areas of study will include:

- the general problem of resource allocation with emphasis on linear programming including an introduction to post-optimal analysis and the determination of transfer prices in a decentralised organisation; 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 an introduction to financial modelling and its applications; development of models using FORESIGHT.

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.

Textbooks
Complete booklist available upon enrolment.

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Textbooks
Lists available on enrolment.

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Prerequisites, SM145 Quantitative Analysis for Business and BS111 Economics 1

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The unit provides a balance between theory and practice and includes a wide variety of statistical techniques. Emphasis is given to the realities of statistical practice including the development of communication skills.

Topics include:
- data handling; exploratory data analysis including data transformations; estimation; collection of data including sampling techniques; data sources with particular emphasis on official collections of the Australian Bureau of Statistics; statistical computing including an introduction to SPSS;
- demographics; rates and ratios; The Life Table; population estimates and projections;
- experimental design; designs for comparing two populations; hypothesis testing using parametric and non-parametric methods. Product testing;
- regression; linear regression model, coefficient of determination, prediction and forecasting; multiple regression model.

Textbook

References
Miller, S. Experimental Design and Statistics. Lond., Methuen, 1975
Munro, M.J. SPSSX Users' Guide. N.Y., McGraw-Hill, 1983
BS300 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, cash flow accounting, long-service leave, superannuation, foreign operations and off-balance sheet financing.

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


BS301 Financial Management

Prerequisites, students enrolled in this unit will be expected to have passed BS201 Corporate Accounting and BS245 Quantitative Management Techniques.

The unit deals with the analytical methods and techniques required to assess a company's performance. The interpretation of the analytical data to assess a firm's long-term financial strength; profitability and intrinsic value of share capital form a major part of the unit.

Various budgets and projected funds statements are used to show the interrelationship between the specific topics considered, which include the choice between debt and equity capital, dividend policy, and working capital management. Receivables policy, cash management, investment in new assets, earnings per share and the cost of capital are considered.

Students are required to submit a major case study.

Textbooks


BS302 Advanced Financial Management

Business financial theory and practice are examined as a means of evaluating the firm's investment, financing and dividend decisions. Analytical techniques for a variety of financial decisions are considered and the role of subjective factors in the analysis is stressed.

The principles of capital budgeting are developed and the cost of capital is derived with consideration for the theory of capital structure and the impact of dividends on valuation. Debt policy and leasing are considered in relation to the acquisition of long-term assets and the cost of capital.

The evaluation of the financial decisions of the firm in relation to their effect on its value is considered in a firm risk and overall market portfolio context. Theoretical as well as practical implications of analysing risk in this manner are discussed.

References


BS304 Auditing

prerequisite, students enrolled in this unit are expected to have passed BS201 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 applications 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. Stettler's System Based Audit. Englewood Cliffs, N.J., Prentice-Hall, 1981


BS306 Taxation

Prerequisite, students enrolled in this unit are expected to have passed BS201 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 effect of overseas transactions and the role of the Income Tax (International Agreements) Act, is also considered.

References

Faculty of Business

CCH Australia Ltd. Taxation Aspects of Plant Equipment and Buildings. 5th edn. Syd., CCH Australia Ltd., 1984

**BS308 Advanced Company Law**

**Prerequisite:** students enrolled in this unit are expected to have passed **BS207 Law of Business Organisations**

The unit is designed to acquaint students with various contemporary issues in company law, especially relevant to a future public practice in accounting. The course examines current topics in such areas as the constitutional and jurisdictional framework of company law, company direction and management, company conflict, company misfeasance, finance company and finance takeover activity.

**Textbook**
CCH Australia Ltd. Australian National Companies & Securities Legislation. (Latest edn), Syd., CCH Australia Ltd.

**References**
Alpass, A.B. and Baxt, R. Cases and Materials on Corporations and Associations. 4th edn, Syd., Butterworths, 1984
Lipton, P. and Herzberg, A. Understanding Company Law. Melb., Law Book Co., 1984

Detailed references to journal articles will be given to students.

**BS309 Law of International Trade**

**Prerequisite:** students enrolled in this unit are expected to have passed **BS206 Contract 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;
- comparison of the role of developing and developed countries with respect to international trade.

**References**
Greig, D. International Law. Syd., Butterworths, 1976
Sassoon, D. CIIF and F.O.B. Contracts. Lond., Stevens and Sons, 1975

**BS310 Budgeting**

Students enrolled for this unit will be expected to have passed **BS202 Cost Accounting, BS203 Management Accounting and BS201 Financial Management**

This is a final-year unit designed to develop and integrate the planning, control and decision-making techniques and skills introduced in cost accounting, management accounting and financial management. The unit also draws on the areas of operations research, economics 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. Techniques such as financial modelling, simulation, cost-volume-profit analysis, discounted cash-flow analysis, standard costing and a number of optimisation models are studied also in the context of their uses as aids to budgetary planning.

The implications of alternative cost and financial structures for risk and return on investment.

Budgeting problems during times of rapidly changing prices. The zero-base approach to budget formulation.

The use of network analysis and critical path methods for planning and control.

The basics of the design, construction and running of corporate models.

Program budgeting — its nature and application.

Budgetary planning and control in non-manufacturing and non-profit organisations.

**References**

**BS311 Public Finance**

**Prerequisite:** BS311 Economics I

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 paradigms and their implications for public sector revenue and expenditure;
- taxation analysis; criteria for evaluating taxes and tax systems; analysis of personal and corporate income tax with particular emphasis on the tax unit; the tax base and tax rates; analysis of present sales tax and excise tax arrangements and alternatives to these; subsidies to commodities and consumers; taxes on the factors of production and schemes to reform the Australian tax system;
- techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

**References**
Australia, Treasury Taxation Papers Nos. 1-15, Canberra, 1974
Brown, C.V. and Jackson, P.M. *Public Sector Economics*. 2nd edn, Lond., Martin Robinson, 1982

**BS312 Economic Research**

**Prerequisite:** BS211 Managerial Economic Analysis or BS213 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.
BS315 Monetary Economics
Prerequisite, BS111 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 financial 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 finance markets — nature and developments.
Australian monetary system and change — nature of change, analysis of implications of change for monetary and financial systems.

References

BS318 Urban Economics
Prerequisite, BS111 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 the impact of resources development.

References

BS319 International Economics
Prerequisite, BS111 Economics 1

This unit provides a study of international trade and finance 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 investment; international developments issues, e.g. economic integration, a new international economic order.

Textbooks
Lindert, P.H and Kindleberger, C.P. International Economics. 7th edn, Homewood, Ill., Irwin, 1982

References

88324 Management Information Systems
Prerequisite, BS327 Systems Design

In this unit, a student develops an awareness of the scope and the problems associated with computerized management information systems. As this is the final systems unit, it builds extensively on material taught in the previous units. The theory is developed using practical assignments and seminars where appropriate.

Topics covered
- Information needs at various levels of management decision-making; styles, theories and frameworks;
- Nolan's growth stages theory;
- Historical developments in management information systems;
- Current decision support systems approaches;
- Technologies that support decision support systems including fourth generation languages, graphics, distributed processing, micro, office automation, micro-mainframe links, pointing devices, voice recognition, computer telephones, portable software, e.g. PICK and UNIX, local area networks, integrated development tools;
- Concepts of data ownership; private vs shared vs common data;
- Different approaches to information resources administration;
- Management approaches to user driven computing;
- Methods of improving DP productivity;
- Methodology for prototyping;
- Impact of information systems on strategic corporate plans;
- Expert systems in business;
- Logic programming and knowledge bases;
- Software and hardware ergonomics.

Textbook

BS327 Systems Design B
Prerequisite, BS327 Systems Design A

The aim of this unit is to enable students to understand the concepts of Data Base and Data Communications systems and to apply design techniques to such systems.

There are three major topics:
Data Base: including data analysis, normalization and the study of the major data base models.

Data Communications: this covers the components of communications systems, protocols and Telecom facilities. Students should be able to design simple networks and understand the considerations for more complex systems, including distributed systems.

Systems Performance: this covers tools and techniques for the evaluation and prediction of systems performance including simple queuing theory.

References
Black, U.D. Data Communications, Networks and Distributed Processing. Virginia, Reston, 1983
Date, C.J. An Introduction to Database Systems. 3rd edn, Reading, Mass., Addison-Wesley, 1981
Kroenke, D. Database Processing. 2nd edn, Chicago, SPA, 1983

BS329 Systems Software A
Prerequisite, BS226 Commercial Programming

This unit provides a practical programming basis for the examination of systems software principles and components, such as operating systems, in the unit Systems Software B.
These topics are included:

**An overview of systems software**
- what systems software is — examples; limitations of applications programming;
- the need for special language attributes — flexible manipulation and definition of data types, table (list) processing, string functions, inter-program communication;
- the need for special techniques — fundamental nature of data structures, dynamic coding, concept of algorithms.

**Systems software languages**
- examples: one or more of the following high-level languages will be examined from a systems programming point of view:
  - BASIC/PLUS, PASCAL, PL/I, LISP, C;
  - examples: low level languages;
  - machine instructions, assembler, macro language, 110 programming;
  - file/device handling, data communications, channel programming.

**Systems programming techniques**
- Data structures:
  - list processing — stacks, queues and dequesues, and their representation in sequential and linked storage;
  - other structures — trees, digraphs;
  - applications — the control of processes; physical file and data base structures.

**Hardware**
- An overview of computer architecture involving comparison between different machines. Processor and peripheral principles are examined.

**Practical work**
- Either of a FACOM OS/IV/F4 or a UNIX environment will be selected to develop a system software project of reasonable complexity. The development language will be either PASCAL or C accordingly.

**References**
No prescribed texts. References will be announced during lectures.

**BS330 Systems Software B**
- Prerequisite: BS329 Systems Software A
- Productivity of systems designers and programmers is improved by an ability to exploit the facilities offered by the systems software, implemented on the computer system with which they are involved. In this unit, the purpose, structure and application are examined of some important system software components, notably operating systems. Students successfully completing this unit should readily adapt to the characteristics and requirements of most commercial operating systems. A selection of the following topics is covered:

**Systems software**
- Language translators, operating systems, data base and data communications management systems, utilities and programming aids.

**Operating systems**
The OS/IV/F4/IV/F4/IV/F4 is examined mainly from a user point of view. Practical experience is gained in writing JCL, and submitting jobs. The concepts of resource scheduling, job scheduling and virtual storage are covered. Other operating systems covered include CP/M or PC DOS and UNIX.

**Technical system management**
The systems programmer, system performance monitoring and tuning, managing systems failures and job accounting.

**Textbook**

**BS332 Business Cases**
- Prerequisite: BS231 Marketing 1
- 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 the various stages of their studies; to give students an overview of how an organisation functions; to give students an opportunity to develop and practice their analytical and communication skills.

**Framework**
The course deals with the planning and implementation of strategy. Major topics include: the setting of objectives; analysis of the present position; strategy formulation; strategy implementation.

**Means of achieving objectives**
Emphasis is placed on the appreciation of strategy concepts, hence the analysis of case studies and the use of management games are important aspects of the course. Students may also be given the opportunity to investigate a real life business-in-business problem.

**References**
To be advised

**BS334 Marketing 3A**
- Prerequisites: BS232 Marketing 2 and either BS215 Economic Techniques for Business or BS245 Quantitative Management Techniques
- Marketing 3A is a mandatory unit in the economics/marketing stream and an elective unit in the accounting and data processing streams.

**Objectives**
The unit is designed as an extension of the knowledge and skills gained from Marketing 1 and Marketing 2 with particular emphasis on developing and analysing information required for marketing decisions.
On completion of the unit the successful student will have developed basic skills in:
- planning a marketing information system for a small firm;
- research design (qualitative and quantitative);
- design, administration and processing of questionnaires;
- sampling techniques.
These skills are a valuable asset for all people in business and especially so for those in specialist marketing positions such as market analysis, product management and advertising.

**Framework**
The unit is divided into four sections:

1. **Marketing information systems**
   - Market research (both desk and field research), value and cost of information, problem discovery and decision analysis, research proposals and integrated marketing information systems.

2. **Research design**
   - Concepts of measurement and sources of error.
   - Observation, surveys and experimentation.
   - Group discussions and depth interviews.
   - Text marketing.

3. **Questionnaire design, administration and processing**
   - Content, phrasing, response format, question sequence and testing.
   - Statistical analysis using standard analysis packages.
   - Interviewer guidelines and training.

4. **Sampling design**
   - Census of sample.
   - The sampling process.
   - Determining sample size.

**References**

**BS335 Marketing 3B**
- Prerequisite: BS232 Marketing 2
- Marketing 3B is designed to prepare students for careers in which they play a role in the implementation of marketing programs.

**Framework**
- Advertising
  - the communications mix;
  - advertising models; corporate versus product advertising; developing advertising strategies, consumer and industrial markets;
  - the role of market research in advertising;
  - how to write a creative brief;
  - agency and media selection;
  - measuring advertising effectiveness.

- Management of the sales force
  - the retail sales function; the industrial sales function;
  - the sales manager, his or her job and career;
  - selection of sales people; sales training programs;
  - compensation plans;
Organisational research

Product management and marketing organisation

- supervision of sales people;
- sales analysis and evaluation; evaluation of sales force performance

International marketing

- Australia's overseas markets;
- the marketing of Australian agricultural products;
- the marketing of Australian ores and mineral products;
- the marketing of Australian manufactured products,

References

Kotler, W.L. Marketing in Australia, Syd., Prentice-Hall, 1983
Terpstra, V. International Marketing, Chicago, Dryden Press, 1983

BS336 Human Resource Management
Prerequisite: BS132 Administrative Studies 1

It would be preferable for students to have also studied BS252 Organisation Behaviour

A three-year elective in the degree course in business

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 these 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;
- designing and maintaining effective employee relations; and
- managing change.

References


BS337 Organisation Design
Prerequisite: BS132 Administrative Studies 1

It would be preferable for students to have also studied BS235 Organisation Behaviour

The aim of the field of study known as organisation design is to create an understanding of what 'good organisation' is for each of a great variety of institutions that are engaged in very different activities on all kinds of scales within contrasting economic, social, political and cultural settings.

Within this context, the unit aims to enable students to identify some of the design choices that can be made and the considerations relevant to these choices; to understand the main problems that arise in designing structures and jobs; and to develop skills in the analysis of practical problems through the use of research and theory of organisation design and involvement in the investigation of at least one organisation.

The unit covers five main areas of study:

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


BS344 Simulation

Prerequisite: BS245 Quantitative Management

This unit develops some of the analytical techniques appropriate to solving business problems that are not readily quantifiable by conventional mathematical methods.

Teaching will be mainly by practical work, students being required to complete a number of small cases, using computer simulation facilities.

The choice of cases will be fairly wide and appropriate to an individual’s specific interests. Applications will be drawn from the following areas:

- Financial evaluation of alternative investments and their associated risk;
- inventory modelling;
- marketing evaluations;
- corporate operations systems evaluation;
- capital modelling;
- economic modelling.

Preliminary reading


BS345 Quantitative Cases

Prerequisite: BS245 Quantitative Management

This unit:

- extends students' familiarity with some important quantitative techniques necessary for problem-solving in business, industry and government;
- uses wherever applicable, quantitative techniques already studied in other units in order to assist in problem-solving, and puts these techniques into a broader perspective;
- imparts the all-important processes of problem recognition, solution and report preparation.

Attainment of these main objectives is by the detailed consideration, at both a group and individual level, of case studies.

Amongst the quantitative techniques considered are linear programming and extensions, Markov chains, queuing theory and simulation. The use of appropriate computer packages plays an integral role in the course.

References

A detailed list of texts, journal articles and other references is issued at the appropriate time during the course.

BS404 Advanced Financial Accounting

Prerequisite: BS201 Corporate Accounting and BS300 Accounting Theory

This unit is most relevant to students planning to enter (or already in) the employment fields of chartered accounting or financial accounting in industry.

The objectives of advanced financial accounting are:

- to study in depth some of the more advanced issues and problems from areas introduced in corporate accounting;
- to make students aware of a selection of contemporary financial accounting issues and to study these issues from both theoretical and practical viewpoints;
- to apply the conceptual framework studied in accounting theory in evaluation of the abovementioned contemporary financial accounting issues.

Course content

The role of financial reporting

Accounting information and share prices

Broadcasting the role of financial reporting

- providing traditional users of accounting information with new reports and forecasts;
- providing new users of accounting information with new forms of report — employee reporting and corporate social responsibility reporting.

References


References


References


References

Advanced techniques and issues:
- advanced consolidation issues;
- joint ventures;
- extractive industries;
- foreign transactions.

The syllabus is flexible to allow new financial accounting issues which gain momentum to replace topics of less relevance.

**References**

Various current Exposure Drafts and Standards issued by the Australian Accounting Research Foundation.

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**BS405 Advanced Auditing**

Prerequisite, students enrolled in this unit will be expected to have passed **BS304 Auditing**.

This unit presumes familiarity with the subject matter of **BS304 Auditing**. It should be most useful for those students planning to enter the profession.

The objective of the unit is to provide students with an understanding of the principles of the audit of Computerised Accounting Information Systems and the application of statistical and analytical techniques in the audit context.

The topics to be studied include:
- the study of the principles of auditing with specific reference to computerised accounting information systems;
- EDP audit techniques;
- statistical sampling techniques;
- analytical review techniques;
- audit related courses for companies failures.

The subject makes extensive use of audit oriented software packages, both using the FACOM mainframe computer and the IBM PC computer.

**References**
Chambers, A.D. Computer Auditing. Syd., CCH Australia Ltd., 1981

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**BS406 Advanced Taxation**

Prerequisite, students enrolled in this unit will be expected to have passed **BS306 Taxation**.

This unit is a final-year unit designed for students who require additional experience of taxation issues. The objective of the unit is to acquaint students with the areas of taxation of practical utility by concentrating on the 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:
- issues of assessable income and allowable deductions;
- unincorporated entities;
- S177 A and tax avoidance;
- trusts, beneficiaries and children's income;
- superannuation funds;
- primary producers;
- future trends and current developments in taxation.

**References**
CCH Australia. Australian Tax Cases, CCH Aust. Ltd.
Income Tax Assessment Act (Latest edn)
Mannix, E.F. and Mannix, J.E. Leading Cases on Australian Income Tax. 5th edn, Syd., Butterworths, 1984
Richardson, R.J. The Taxation of Corporations and their Shareholders. 4th edn, CCH Aust. Ltd, 1983
**Graduate Diploma subjects**

**BS457  Introduction to Financial Management**
Prerequisite: nil
A first-year unit in the graduate diploma course in business administration.

The general objective is to educate candidates to become informed and intelligent users of accounting information.

The course is particularly concerned with how accounting information can help the firm achieve all its goals. One role of accounting is in the measurement of performance, and it is in this area that the strengths and limitations of accounting information is discussed.

No prior knowledge of accounting is assumed.

Applicants who have previously studied accounting at a tertiary level or are working as accountants are advised to enrol for one of the subjects from the graduate diploma course in accounting. Applicants who have studied accounting at sub-tertiary level or who finished their courses some time ago are enrolled in this subject.

Topics include:
- the objectives of business organisations and a comparison with the objectives of an accounting system;
- accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
- costs for decision-making and specific techniques such as cost-volume-profit analysis and discounted cash flow analysis;
- divisional performance evaluation and transfer pricing;
- budgeting and profit analysis.

**References**
Hunter, M.H. and Allport, B.J., Accounting, Sydney, Holt, Rinehart and Winston, Rev. edn, 1979
Ma, R. and Mathews, R. The Accounting Framework. 1st edn, Melbourne, 1979
McDonald, R.C., Cooper, R.G. and Astill, B.J., Accounting for the Non Finance Executive. Rev. edn, N.Z., Longman Paul Ltd., 1983

**BS461  Economics**
No prior knowledge of economics is assumed. Applicants who have majored in economics at a tertiary level are advised to enrol for another post-diploma subject. Applicants who have studied economics at secondary level or who finished their course some time ago are enrolled in this subject.

Consideration is given to the factors that determine the general level of economic activity and those economic concepts and methods of analysis that bear directly on the management of a firm.

The topics to be covered are drawn from: markets, resource allocation and efficiency 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 price1 incomes policies.

**References**
Davies, J. and Hughes, S. Managerial Economics, Plymouth, McDonald and Evans, 1979
Indecs Economics, State of Play 3, Syd., George Allen and Unwin, 1984
A detailed reading guide will be issued at the start of the semester.

**BS463  Current Issues in Economics**
Prerequisite: approved tertiary studies in economics

In this unit, important contemporary issues in economics are examined and analysed, with particular emphasis on economic policy implications. Particular topics covered are determined by the contemporary situation but usually are selected from the following areas: fluctuations in economic activity (unemployment and inflation); policies designed to offset undesirable fluctuations in economic activity; industrial relations; industry policies (inter-sector relationships, protection, structural change); balance of payments problems and policies (including exchange rate policies); current social economic issues.

**References**
Because of the contemporary nature of this course, details of references are provided at the first class. Students are expected to consult newspapers, current journals, and selected government reports.

**BS464  Australian Industrial Relations**
This unit provides a study of the Australian industrial relations system with some comparative reference to the systems of other countries.

Topics to be studied include:
- nature and meaning of industrial relations and an industrial relations system;
- nature, sources and manifestations of industrial conflict; pattern of strike activity in Australia;
- parties: trade unions, employer associations and industrial tribunals;
- rule-making processes: arbitration, collective bargaining, worker participation schemes.

**References**

**BS466  Industrial Relations**
Prerequisite: BS581 Administration of Organisational Systems. A half-unit in the graduate diploma course in business administration

This half-unit provides an introduction to the study of Australian industrial relations with particular emphasis on industrial relations in organisations.

Topics include nature of industrial relations and industrial conflict and conflict resolution. Class sessions draw upon lecture-discussions, films and group experiential exercises.

**Textbook**

**BS552  Financial Structures and Policy**
Prerequisite: a pass or preclusion from BS457 Introduction to Financial Management

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 performance evaluation, working capital management, capital structure and leverage, fixed asset acquisition, dividend policy, valuation of the firm and business combinations.

**Textbook**

**References**

**BS572  Systems Analysis and Design**
A core semester subject in the graduate diploma course in management systems

The subject is intended to develop a formal awareness of the process of analysing and developing systems while at the same time emphasising the necessary communication skills for success.

The tools, techniques and methodologies for both analysing and design; ing an information system are covered to assist students in:
- further understanding the system development process;
- acquiring the technical skills necessary to develop EDP-based information systems;
— evaluating the effectiveness of computerised information systems

The development of techniques for successful communication with both users and other computing professionals:
— written skills of report writing and essays;
— fact gathering techniques of interviewing, questionnaires, sampling, etc.;
— verbal communication skills for various forms of presentations;
— systems documentation techniques of structured analysis.

References
Kroenke, D. Database Processing. 2nd edn, Chicago, SRA, 1983

BS573 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, public data bases, approaches to risk analysis, optimisation and simulation methods, evaluation and selection of computing systems.

References

BS581 Administration of Organisational Systems

Prerequisite, no prior knowledge of administrative theory is assumed, but working experience in a business, public service, or any other form of organisation is essential.

A first-year unit in the graduate diploma courses in business administration and management systems.
This unit constitutes an examination of organisational problems in the implementation of corporate strategy with particular emphasis on the relationship between strategy, structure, process and people.
The learning experience depends largely on the involvement and experience of the students, who bring knowledge and skill to the task.
The lecturer's role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.
Theoretical models are applied to problems in order to permit impartial analysis of organisational issues.
Experience is also gained in co-operative group preparation of material and presentation to the class.
Theory is applied to real situations through assignments requiring the investigation of an organisation to which the student has access.
The value of theory as a means of expanding the range of a manager's decisions and actions is the basis of this course.

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 psychosocial system.
— managerial roles and management style.
— design of rewards, restraints and controls.
— managing in the total system.

References
Jelinek, M., Litterer, J.D., Miles, R.E. Organisations by Design: Theory and Practice. BPI, Plano, Texas, 1981

BS582 Administration of Human Resources

Prerequisite, BS581 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 current ideas of organisation theorists concerning communication, decision-making, behaviour and organisation development;
— the student is able to use these concepts to manage people;
— the development of 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 experiential exercises, case studies, test, student presentations and films.
These are complemented by extensive private reading and practical assignments out of class.

Textbook

BS583 Marketing Administration 1

Prerequisite, nil

An elective unit in the graduate diploma courses in accounting and management systems.
Marketing Administration 1 deals with the fundamentals of business planning with particular emphasis on the market-place. The unit has been designed to provide candidates with an opportunity to relate their special skills to business situations.

Objectives
To give students a broad understanding of the marketing environment; an overview of the total business function, in particular, with respect to planning and decision-making.
To achieve the above objectives, emphasis is on case study analysis and other practical assignments.

Structure
Marketing Administration 1 is an introduction to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning and consumer behaviour.

Instruction
Emphasis is shared between theoretical considerations 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.
Framework
Introduction — the marketing concept, the scope of marketing management. The market and an analysis of demand. Consumer behaviour, consumption patterns 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.

Reference

BS584 Marketing Administration
Prerequisite, BS583 Marketing Administration
An elective unit in the graduate diploma courses in accounting and management.
This unit builds upon the knowledge students have gained from Marketing Administration 1 especially in respect to the marketing planning process and the elements of the marketing mix. The objective in this unit is to:
— introduce the student to the fundamentals of marketing research;
— identify the value of additional information and how this information can be used;
— introduce the student to end-use analysis and also the various approaches to forecasting.

Instruction
Class sessions consist of lectures relating to theoretical concepts and to case study analysis. Students are expected to participate actively throughout the semester, and are required to present individual as well as group assignments.

Reference

BS585 Secretarial Practice and Procedure
This unit is intended to equip potential company secretaries for their future careers.
Topics covered include:
— meeting and conferences, duties of chairman, organisation, standing orders, terms and expressions, etc.;
— board of directors’ 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 Market: functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc.

Textbooks
A.A.S.E. Listing Requirements
Chappoeden, W.J. Joske’s Law and Procedure at Meetings in Australia. 7th edn, Law Book Co., 1981, or
Horsley, M.G. Meetings, Procedure, Law and Practice. 4th edn, Syd., Butterworths, 1984
Companies Code 1981

BS586 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 paid to: job satisfaction and morale; manpower planning; employee benefits and services; recruitment, selection and induction; training; performance appraisal; salary and wage administration; management development; organisation development and human resource development and the ways these various aspects can be related into a comprehensive integrated system of personnel management.

Textbooks

References
Dessler, G. Personnel Management: Reston, VA., 1976
Pigors, P. and Myers, C.A. Personnel Administration: A Point of View and a Method. 7th edn, Tokyo, McGraw-Hill, 1973

BS587 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
To integrate the philosophies discussed in all other units. Students are required to incorporate behavioural, economic, financial and marketing concepts and demonstrate that they have a clearly defined understanding of administration. The unit provides an opportunity to improve capacity to identify, analyse and evaluate strategic business problems and opportunities.

Framework

References
Christensen, C.R. et al Business Policy. Text and Cases. 5th edn, Homewood Ill., Irwin, 1978
Steiner, G. Strategic Planning: What Every Manager Must Know. N.Y., The Free Press, 1979

BS588 Administrative Policy
Prerequisite, nil
This unit is taken in the course for the graduate diplomas in accounting and management systems.
The course provides students with an understanding of the management problems involved in developing strategic policies for organisations in both the public and private sectors.
The student is given a practical understanding of how the strategic planning process works, how corporate objectives are developed and how these are translated into strategic plans.
Emphasis is shared between theoretical considerations, the practical problems of case studies and discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementations.
Students are expected to participate actively during the semester and are required to present individual and group presentations.

References
Steiner, A. Strategic Planning, N.Y., The Free Press, 1979
BS594 Quantitative Methods

This unit aims to provide students with the fundamental mathematical tools and techniques required for the analysis of empirical data. The unit covers topics such as linear programming, forecasting, inventory management, and spreadsheet analysis. It also introduces students to hypothesis testing and sampling.

BS595 Marketing Management 1

This unit introduces students to the role of marketing as part of the overall business function and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning, and consumer behaviour. It covers topics such as consumer behaviour, the buying process, market segmentation, product/service policy, life cycle and adoption processes, pricing policy, and advertising/promotion/personal selling.

Assessment

By a combination of individual and group assignments.

References

De Bono, E. Marketing Opportunities. Lond., Penguin, 1980

BS596 Marketing Management 2

This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in regard to the marketing concept, the marketing planning process, and the elements of the marketing mix. It aims to introduce the student to the fundamentals of marketing research, identify the value of additional information and how this information can be used, examine alternative approaches to new product introduction, introduce end-use analysis and the various approaches to forecasting, examine the alternative approaches to organising marketing activities, and 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 as well as group assignments.

Course framework

The main topics include:
- The role of marketing within the objectives and constraints of corporate strategy;
- Forecasting: costs and benefits, demand determinants, predicting trends, simulation models;
- Marketing research: costs and benefits, marketing research strategy, evaluation of results;
- Test marketing: purpose of test marketing, the practical problems, applicability of Bayes theorem;
- Services marketing: key points of differences as against product marketing, how to classify services in terms of marketing strategy development, marketing for the professions;
- Organising for marketing: implications of the environment, relationship with total organisation, basic organisational types.

References

Steiner, G.A. Strategic Planning. N.Y., The Free Press, 1979
BS652  Profit Planning and Control
Prerequisite: nil
A unit in Group A of the Graduate Diploma in Accounting, which is concerned with developing practical profit plans for a business enterprise and the control of the resources invested in the enterprise. Topics covered include: profit planning both short-term and long-term; stages of evaluation, strategy, planning and reporting operations; controllership functions and responsibilities — control of assets, liabilities, income and expenses; control techniques.

References
Ansoff, M.G. Strategic Management, Lond., Macmillan, 1980
Levin, R.F. Planning and Control for Profit. 2nd edn, Lond., Heinemann, 1974

BS654 Contemporary Auditing
Prerequisite: BS304 Auditing or an equivalent unit
The objective in this unit is to evaluate in a series of seminars some of the important contemporary issues facing the profession. Some of these issues might include: behavioural aspects in auditing, recent developments in the law of negligence, the development of auditing standards, forecasts in published accounts — the role of the auditor, government regulation, the role and responsibilities of the profession and audit committees.

References
Detailed reading guides will be issued during the semester.

BS655 Corporate Taxation
This unit involves a study of those aspects of taxation law relevant to corporations and their shareholders. The course studies income and deductions for the ongoing company; tax consequences of liquidations, mergers and reorganisations; sales tax; proposals for reform of corporate taxation; superannuation and employee benefits.

References
Australian Federal Tax Reporter. North Ryde, N.S.W., CCH Aust. Ltd.
Australian Income Tax Assessment Act. 1936 as amended
Australian Sales Tax Legislation. North Ryde, N.S.W., CCH Aust. Ltd., 1984
Richardson, R.S. The Taxation of Corporations and their Shareholders. 4th edn, North Ryde, N.S.W., CCH Aust. Ltd., 1983
Journal Articles

BS656 Taxation Planning
In this unit, the objectives of tax planning are studied together with selected techniques to achieve these objectives. An analysis is also undertaken of the effects of marital breakdown on tax planning and the effects of tax planning on government revenue and community wealth distribution. Topics include a study of trusts, alienation of income, service entities, contesting an income tax assessment, preventing the avoidance of income tax.

References
Australian Federal Tax Reporter. North Ryde, N.S.W., CCH Aust. Ltd.
Australian Income Tax Assessment Act 1936 as amended
Contesting an Income Tax Assessment. 3rd edn, North Ryde, N.S.W., CCH Aust. Ltd., 1981
Marks, B. Alienation of Income. 2nd edn, North Ryde, N.S.W., CCH Aust. Ltd., 1982

BS657 Introductory Computer Accounting
Students having prior EDP experience will be precluded from this unit
This unit introduces postgraduate accounting students to the concepts, benefits and control requirements of computer based accounting information systems and familiarizes students with the use of a computer to satisfy accounting information needs. This one semester course will cover, in varying degrees of detail, the following broad areas:
- Computer features
- Computer equipment
- Computer data structures
- Computer uses, costs and benefits
- Computer programming in BASIC
- Computer accounting packages and systems

References
References shown below are a representative sample of some of the texts available:
Cushing, B.E. Accounting Information Systems and Business Organizations. 3rd edn, Mass., Addison-Wesley, 1982
Van Lint, W., Miller, A. and Belcher, B. Introduction to Computer Based Accounting. Syd., Prentice-Hall, 1982
Facility of Business


BS662 Financial Institutions and Markets

Objectives
To provide students with:

(i) an understanding of the structure, functioning and development of Australian financial institutions and markets; and

(ii) an appreciation of the nature and workings of the Australian monetary system and its management.

Course outline
Liquidity and money
— nature, role and evolution of money
— definition of money
— supply of money and liquidity

Financial markets and institutions
— nature and role of financial intermediation
— flow of funds analysis
— growth and description of Australian financial intermediaries

Australian, international finance markets
— nature and developments
— analysis of change for Australian finance markets and monetary authorities

Effects of liquidity and money on economic activity
— determination of interest rates
— Keynesian and monetarist transmission mechanisms

Textbooks

References
Inquiry Into The Australian Financial System (Campbell Committee) Reports as available.

BS663 International Finance and Monetary Theory

Prerequisite, BS662 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.
Elementary macroeconomic model
— aggregate demand and supply

Monetary influences on economic activity
— the demand for and supply of money
— transmission of liquidity changes to economic activity

The international financial system
— description of events since 1945
— recent reform of the system

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

Sovereign lending

Textbooks

References
Davis, J. and Lewis, M. Monetary Policy in Australia. Melb., Cheshire, 1980
Inquiry into the Australian Financial System (Campbell Committee). Reports as available.

A detailed reading guide is issued for each topic.

BS674 Current Issues in Systems Design

Prerequisite, BS572 Systems Analysis and Design

Course objectives
In this unit, some of the most recent developments and trends in computer applications and technologies are examined, to:

— encourage students to appraise critically state of the art developments and evaluate them for relevance to their own environment;
— communicate recent systems design techniques;
— provide an awareness of the anticipated directions within the computer industry.

Course structure
Topics covered include:

— systems development methodologies
— user based systems
— microcomputers
— communications networks
— relational data base
— data base integrity
— design for performance

Textbooks
Black, V.D. Data Communications Networks and Distributed Processing. Virginia, Reston, 1983
Bradley, J. Introduction to Data Base Management in Business, N.Y., HRW, 1983
Date, C.J. An Introduction to Database Systems. 3rd edn, Reading, Mass., Addison-Wesley, 1981
Kroenke, D. Database Processing. 2nd edn, Chicago, SRA, 1983
Peat, L.R. practical Guide to DBMS Selection. N.Y., Walter de Gruyter, 1982

BS675 Systems Project Management

Course objectives
After completing this unit, students should be able to:

— co-ordinate the skills of a systems development team, users and operators;
— prepare and present systems proposals to various levels in an organisation;
— evaluate both the feasibility of suggested projects and the viability of suggested solutions;
— plan and control the implementation of new systems.

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 BS673 Commercial Systems Design.
Course structure
Project teams and their management; project leadership; selection and evaluation of systems projects; proposal presentation and promotion; proposal evaluation; project methodology and control; the implications of changing systems; implementation of systems projects.

Preliminary reading

References
Sempervivo, P.: Teams in Information Systems Development. N.Y., Yourdon, 1980
Thomsett, R.: People and Project Management. N.Y., Yourdon, 1980

BS678 Management Systems
Course objectives
This unit covers the theory of management information systems and their 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;
— evaluate the social implications and technical feasibility of an information system.

Candidates usually take this unit in the last semester of the course.

Course structure
Introduction to management information systems; the development of management information systems and decision support 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:
Cash, J.I. et al.: Corporate Information Systems Management, Ill., Irwin, 1983

BS679 Systems Development Project
The objective of this project is to:

— provide the student with supervised and structured practical experience in the development of computer-based management systems;
— allow the student to demonstrate a creative faculty in the area of systems design;
— provide an intergration of the student's understanding of data processing by encouraging the drawing together of various concepts and techniques developed during the course;
— provide the student with an opportunity to develop the ability to communicate through the presentation of written and oral project reports.

Candidates usually will have gained above-average results in all first year units required for the course, prior to commencing this project.

BS681 The Organisation
A first-year subject in the graduate diploma course in organisation behaviour.

The subject is concerned with:

— comparison of ways of describing and analysing organisations;
— the identification of organisational problems and the consideration of solutions;
— the exploration of the variables in a systems approach to organisational effectiveness.

BS679 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.

Course structure
The final selection of topics is made from the following, depending on the student's interests: The I-S function — objectives, organisation, performance; operations management; capacity management and planning; the user interface, end-user computing, office automation; negotiating; human resources management; productivity tools.

References

BS681 The Organisation
A first-year subject in the graduate diploma course in organisation behaviour.

The subject is concerned with:

— comparison of ways of describing and analysing organisations;
— the identification of organisational problems and the consideration of solutions;
— the exploration of the variables in a systems approach to organisational effectiveness.
References

BS682 Managing Conflict and Change in Organisations
A second-year subject in the graduate diploma course in organisation behaviour. The subject introduces students to the current theory and practice associated with managing change and conflict in organisations. It looks at the techniques of organisation development (OD) and the role of the change agent in a largely experiential way. Following this it examines the applicability of this body of OD knowledge to the role of the practising manager in a day-to-day setting. The similarities and differences between these roles, manager and change agent, are identified with the object of developing a new synergy, a set of identified approaches for bringing about change and managing conflict in organisations.
Industrial conflict is an important topic integrated with group dynamics theory.

Textbooks

BS683 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 integrates and applies material from the previous subjects in the course and introduces material from the managerial sub-system model.
Key topics are: the manager's role; use of the computer as a research tool; techniques of managerial behavioural research, including a minor project; leadership theory; development of leadership skills; managerial behaviour and group dynamics; decision-making and problem-solving; organisational climate and effective management; future and changing roles of management.

Textbooks

Computer Manuals to be specified

BS684 Legal Aspects of Finance
Prerequisites, no prerequisite studies in law are required. Students who have not studied law previously are expected to be 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
Legal nature of finance
Consumer credit transactions; corporate financing; negotiable instruments; factoring and leasing. Stamp duty and security practices are associated with managing change and conflict in organisations. The subject introduces students to the current theory and practice associated with managing change and conflict in organisations. It looks at the techniques of organisation development (OD) and the role of the change agent in a largely experiential way. Following this it examines the applicability of this body of OD knowledge to the role of the practising manager in a day-to-day setting. The similarities and differences between these roles, manager and change agent, are identified with the object of developing a new synergy, a set of identified approaches for bringing about change and managing conflict in organisations.
Industrial conflict is an important topic integrated with group dynamics theory.

Textbooks

AT693 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 help participants understand their own perceptions, values and attitudes, and to gain insight into how these may influence behaviour;
— to increase options for behaviour (mainly communications) through learning appropriate skills. Methods used are largely co-operative and practical rather than didactic and theoretical. Active group participation is therefore necessary.
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 application of skills, etc. Students are also required to submit two minor written assignments. There is no written formal examination. Because of the experiential nature of this subject, a minimum 80% attendance is required.

References
Extensive reading and other resources will be given as appropriate.

BS751 Research Paper
This is a component of the graduate diploma course in accounting. The objective of the research paper is to demonstrate the students' ability to apply theoretical concepts, of their own choosing, to a practical situation. The paper may be a discussion of how the concept could be applied in an organisation, indicating likely difficulties of such an application; or alternatively, the paper could be an analysis of a concept actually in use, discussing either its usefulness, or the techniques that are necessary for its implementation.
The length of the paper should be between 10,000 and 12,000 words.

References
Sterling, R.R. ed. Research Methodology in Accounting. Lawrence, Kansas Scholars Book Co., 1972

BS752 Corporate Financial Management
Objectives
To develop a framework of corporate strategy including:
— a understanding of how corporate strategy is formulated and the role of the corporate finance function in strategy development;
— an understanding of the effects of corporate strategy on the firm's investment and financing decisions.
To examine the investment and financing decisions of the firm as they relate to the overall corporate strategy. Emphasis is on the trade-off between risk and return that is present in these decisions.
Internal evaluation
This unit is designed to develop an understanding of the way in which financial information is used to evaluate a company and the way this is used to evaluate and determine the firm's corporate financing and investment strategy.

Course outline
Evaluation of the firm's financial position:

— financial statement analysis — an overview plus review of public financial statements of the firm;
— cross-sectional analysis of accounting numbers;
— some problems in evaluation, viz. variations in accounting methods, effects of inflation, impact of exchange rate fluctuations, leasing.

Internal evaluation
— fund flow analysis; cash flow analysis — testing for cash inadequacy, cash surplus,
— application of comonvar financial evaluations:
— internal financial control;
— 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., McKenn, V., Pollard, I. Handbook of Australian Corporate Finance. Syd., Butterworths, 1983
Weston, J. and Brigham, E. Managerial Finance. 5th edn, Hinsdale, Ill., Dryden Press, 1978

88754 Investment Management
Prerequisite candidates usually would have completed first year of course

Objectives
• to acquaint the student with the various securities and funds available for corporate investment;
• to introduce the use of financial and other information in the evaluation of alternative investment media;

References

88755 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. Students are required to present their research projects during this time. Proposals for projects are submitted by 31 March. These must include sufficient details for staff to assess the usefulness and feasibility of a project.

References
No specific references are required for a unit of this nature. General references on report writing will be used, such as:
FACULTY OF ENGINEERING...................................... EN13
Graduate Diploma in Entrepreneurial Studies .......... EN13

DEPARTMENT OF CIVIL ENGINEERING.................. EN13
—Career potential ............................................. EN13

Undergraduate courses
Degree of Bachelor of Engineering (Civil) .......... EN13
Diploma of Building Surveying ......................... EN14

Postgraduate courses
Graduate Diploma in Civil Engineering Construction EN15
Master of Engineering ....................................... EN15

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING........ EN16
—Career potential ............................................. EN16

Undergraduate courses
Degree of Bachelor of Engineering (Electrical and Electronic) .......... EN16
Stream in Computer Systems Engineering .......... EN17
Degree conversion program ................................ EN17

Postgraduate courses
Graduate Diploma in Digital Electronics .......... EN17
Graduate Diploma in Telecommunication Systems Management .......... EN18
Master of Engineering ....................................... EN18

DEPARTMENT OF MANUFACTURING ENGINEERING ......... EN18
—Career potential ............................................. EN18

Undergraduate courses
Degree of Bachelor of Engineering (Manufacturing) ..... EN18
Degree conversion program ................................ EN19
Associate Diploma in Production Engineering .......... EN19

Postgraduate courses
Graduate Diploma in Biochemical Engineering .......... EN19
Graduate Diploma in Chemical Engineering .......... EN20
Graduate Diploma in Industrial Management .......... EN20
Graduate Diploma in Manufacturing Technology .......... EN20
Master of Engineering ......................................... EN20
Master of Engineering (Computer Integrated Manufacturing) .......... EN21
Academic Staff

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Principal Tutor
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Courses offered

The Faculty of Engineering includes the departments of Civil Engineering, Electrical and Electronic Engineering, Manufacturing Engineering, and Mechanical Engineering. Professional courses offered by the Faculty and these departments are as follows:

Faculty of Engineering
Graduate Diploma in Entrepreneurial Studies

Department of Civil Engineering
Degree of Master of Engineering, by research
*Degree of Bachelor of Engineering (Civil)
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 Bachelor of Engineering (Electrical and Electronic)
Graduate Diploma in Digital Electronics
Graduate Diploma in Telecommunication Systems Management

Department of Manufacturing Engineering
Degree of Master of Engineering, by research
*Degree of Bachelor of Engineering (Computer Integrated Manufacturing)
Graduate Diploma in Chemical Engineering
Graduate Diploma in Industrial Management
Graduate Diploma in Manufacturing Technology

Department of Mechanical Engineering
Degree of Master of Engineering, by research
*Degree of Bachelor of Engineering (Mechanical)
Graduate Diploma in Air-conditioning
Graduate Diploma in Maintenance Engineering
For details of these courses see sections for the above departments.
*Cooperative/sandwich courses with periods of industrial experience.

Feeder courses

The Faculty of Engineering has an arrangement with the Tasmanian College of Advanced Education 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 manufacturing and mechanical engineering and the first year of the civil and the electrical and electronic courses 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.

Cooperative education in the Faculty of Engineering

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, 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 placement officer of his/her department 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 each 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:

APM Ltd
AVH Electrical Industries Pty Ltd
Advance Industries Ltd
Aeronautical Research Laboratories
Ajax Pumps
Alcoa of Australia Ltd
Alex Folley Pty Ltd
A.W. Allen Ltd
Anthony Bearings Pty Ltd
Arcan Engineering Pty Ltd
Advance Industries Ltd
Australian General Electric (Appliances) Ltd
Australian Glass Manufacturers Co
Australian Iron & Steel Pty Ltd
Australian Portland Cement Ltd
Autonomous Energy Systems
Belpco Controls Pty Ltd
B.X. Plastics (Aust) Pty Ltd
Brownbuilt Ltd
CFM Aluminium Fabricators
CIG Ltd
CSIRO
Carlton & United Breweries Ltd
City of Box Hill
Brighton
Caulfield
Camberwell
Croydon
Doncaster & Templestowe
Essendon
Footscray
Hawthorn
Heidelberg
Knox
Malvern
Melbourne
Nunawading
Oakleigh
Prahran
Preston
Ringwood
St. Kilda
South Melbourne
Waverley
Clark Rubber
G.J. Coles
Comfort Piling and Engineering Sdn Berhad
Commonwealth Aircraft Corporation
Companion Pty Ltd
Consolidated Electronic Industries Pty Ltd
Containers Ltd
Costain Australia Ltd
Country Roads Board
Cyclone KM Products Pty Ltd
Daisonware Pty Ltd
Dandenong Valley Authority
Department of Construction
Department of Defence
Department of Industry and Commerce
Department of Transport
Department of Works
W.A. Deutzer Pty Ltd
Dorf Industries Pty Ltd
Dunlop Australia Ltd
Duranol Plastics
East Coast Earthmoving
E.Z. Industries Ltd
Ensign Dry Cleaners (Vic) Pty Ltd
Email Ltd
Englehard Industries Pty Ltd
L.M. Ericson Pty Ltd
FRS Industries
P.E. Frye Pty Ltd
GBS Hard Metal Co
J.G. Garnett Pty Ltd
Garlick & Stewart
Gardner & Naylor Pty Ltd
Gas & Fuel Corporation of Victoria
General Motors-Holden Pty Ltd
Geos (Australia) Pty Ltd
Government Aircraft Factory
Gutteridge Haskins & Davey Pty Ltd
Holeproof Ltd
Housing Commission of Victoria
ICI Australia Ltd
Ingersoll-Rand (Aust) Ltd
Insulwood Products
International Harvester Co of Aust Pty Ltd
Irwell Pty Ltd
Irwin Johnston & Partners Engineers Pty Ltd
James Miller Holdings Ltd
John Connell & Assoc
K. & G. Johnston Pty Ltd
White & Black, North Melbourne
Robert Jones Engineering Pty Ltd
Kemphorne Lighting Co
G. Kennon & Co Pty Ltd
Keogh Wood and Partners Pty Ltd
Kinnaird Hill DeRohan & Young
Kraft Foods Ltd
Krew Trading Co
L & L Printed Art
Lewis Construction Pty Ltd
David Linacre Pty Ltd
Malaysia International Consultants
McPhersons Ltd
— Machine Tool Division
— Engineering Research Department
McConnell Dowell Constructors Ltd
Master Steel Pty Ltd
Melbourne and Metropolitan Board of Works
Melbourne and Metropolitan Tramways Board
Mica & Insulating Supplies Co Pty Ltd
Miliar & Merrigan Pty Ltd
Ministry of Planning & Environment
Mitford Soil Engineering Pty Ltd
Mobil Oil Aust Ltd
Moran Upholstery
Motorola Communications
Myton Rodd Ltd
Neta Industries
Nissan Motor Co (Aust) Pty Ltd
Noel M. Heather and Co Pty Ltd
Nylex Corporation Ltd
Opden Industries Pty Ltd
P.B.R. Industrial Co. Pty Ltd
Philip Morris Ltd
K. G. Pizzev Pty Ltd
Plastics Industries
Port of Melbourne Authority
Premwire Metal Industries Pty Ltd
Public Works Department
Raywood Electronics
Reed Paper Products Ltd
Reinforced Plastics Pty Ltd
Repco Ltd and its subsidiaries:
— Repco Engine Parts Pty Ltd
— Patons Brake Replacements Pty Ltd
— Repco Bearing Co Ltd
— Comcork Manufacturing Co
— Repco Lorimier
Reva Plastics Pty Ltd
Reynolds Tanning Co Pty Ltd
Reyrolle Ltd
Rheem Aust Ltd
Robert Bosch (Aust) Pty Ltd
Robert H. Grant Pty Ltd
Roche Bros Pty Ltd
Rocla Industries Ltd
Scientific Electronics Pty Ltd
Scott & Furphy Engineers Pty Ltd
John Scroggie Pty Ltd
Selectronic Components
Shell Company of Australia Ltd
Shire of Eltham
Healesville
Lilydale
Whittlesea
Siddons Industries Ltd
Silentbloc (Aust) Pty Ltd
Sis Bros Pty Ltd
Sperry New Holland
State Electricity Commission of Victoria
State Rivers and Water Supply Commission
Stephen Dunn & Associates
W.C. Stevens (Vic) Pty Ltd
Strand Electric (Aust) Pty Ltd
Sutton Tools Pty Ltd
Telecom Australia (Victoria Division)
The Stanley Works Pty Ltd
Unbrako (Aust) Pty Ltd
V.D.O. Instruments (Aust) Pty Ltd
Varian Techtron Pty Ltd
Vickers Ruwolt Pty Ltd
Victorian Railways
Vulcan Australia Ltd
Wilmot Breeden (Aust) Pty Ltd
Wilson Transformers
W.D. & H.O. Wills (Aust) Ltd
Wood, Bromley, Carruthers & Mitchell Pty Ltd
Zenford Pty Ltd
Engineering degree courses

Swinburne Institute of Technology

Elective Studies

Half year only

Postgraduate Courses

Year 1

Year 2

Year 3

Year 4

Form 5

Form 6

Year 1

Year 2

Year 3

Year 4

Orientation Systems

Semesters

Semesters

Experience

Cooperative Semesters

Academic Semesters

Academic Semesters

Industrial Experience

Other Elective Options
Advice to prospective students

First year engineering degree
Secondary students considering a professional engineering course in civil, electrical and electronic, 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 Institute plus two semesters of industrial experience. The course structure for engineering degree courses is shown 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 admissions in this category are essentially considered on the basis of the course studied by the applicant and the results obtained. 'Admission with advanced standing'.

Diploma of Building Surveying
Secondary students should note that there are no prerequisite subjects for entry to the diploma course in building surveying. However, a background in mathematics and the physical sciences is important for students planning to enter this course. Recommended Year 12 subjects are Physics or Chemistry and a branch of mathematics.

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 Panel which consists of the Dean of Faculty (or his nominee) together with a representative from each of the four engineering departments. The panel is responsible for selecting those applicants who are considered most likely to complete the course concerned satisfactorily

Selection is based primarily on academic merit as assessed by results achieved in Year 12 subjects, or their equivalent.

The selection panel 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 panel may arrange.

Eligibility to apply for entry

Year 12
A course of study accredited by the Victorian Institute of Secondary Education (VISE) at Year 12 level in the following Group 1 subjects: English, Pure Mathematics, Applied Mathematics, Physics and Chemistry. Within the subjects Pure and Applied Mathematics, optional Unit C — Complex Numbers and Matrices is strongly recommended. Results of Grade D or better in at least four of the subjects listed above is required. Group 2 subjects: not taken into account.

Tertiary Orientation Program
TOP courses are considered on the basis of an equivalent course of study to the VISE Year 12 subjects listed above.

Persons who complete satisfactorily, the science/engineering 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.

Mature-age entry
Special provision is made for mature-age entry to engineering courses. The scheme is designed for applicants with less than the full entrance requirements but who have the ability to cope with their proposed course of study. This provision is not intended for students who have recently failed the Year 12 examinations.

Applicants in this category are generally people in, or beyond, their early twenties who have had some years of work experience.

A mature-age applicant may be required to undertake a special entry test early in February and present for an interview.

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. This test is usually held early in February.

An interview may be required for persons who do not hold the qualifications stated above.

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 mature-age entry, applications for entry to full-time first-year courses must be made through the Victorian Universities Admissions Committee, 40 Park Street, South Melbourne, 3205. The closing date for applications for 1986 entry is 4 October 1985.

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 VUAC. Application forms are available from the Information Office, telephone 819 8444.

The closing date is usually the middle of January in the year of application.

Mature-age entry
Mature-age applications should be made 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.

Deferment
Applicants offered a place in first year for 1986 may apply for deferment until 1987. Applications for deferment should be made in writing and directed to the Registrar.

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 Faculty Secretary.
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.

Admission to graduate diploma courses
Graduate diploma courses in a range of specialist areas of importance to engineers are available as part-time evening classes. 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 courses
Applicants for these courses must apply directly to Swinburne. A letter of application should be written to the Registrar.

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 admissions 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 or group of subjects rather than the details of the content matter of each subject within such series or group.
(e) A credit may be granted on the basis of relevant industrial experience.

1.3 For all graduate diploma courses offered by the Faculty of Engineering, a student must complete at least sixty per cent of the prescribed total course time for that particular course at Swinburne.

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 time-tables
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 time-tables for all years of engineering courses will be displayed at enrolment. Students should note that these time-tables are provisional only and may be changed depending on staff and facilities available. Where it is necessary to change a time-table, 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, Arts or Business.

A list of approved subjects will be published at the start of each year. The subjects available in 1985 were:

AT792 Applied Psychology
AT793 Literature and Media
AT794 Sociology
AT795 Law in Society
AT796 Technology and Society
AT797 Archaeology
AT798 Philosophy
BS501 Accounting and Finance
BS502 Legal Studies
BS503 Managerial Economics

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 work 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 subjects in which they enrol. Students should therefore carefully check their statement of enrolment which is posted to them approximately four weeks after the commencement of each semester.

Students enrolled in subjects spread over both semesters, for example most subjects in common first year engineering degree, should note that mid-year progress reports are published 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 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 examinations in the seventeenth and eighteenth weeks.

The specific weeks devoted to these activities in 1986 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 1/15th 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 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 re-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).

(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—Pass
P*—Marginal pass in the subject
N—Fail
N*—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 full-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/week in the \( i \)th subject, \( z_i \) is the rating in the \( i \)th 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>3</td>
</tr>
<tr>
<td>N*</td>
<td>1</td>
</tr>
</tbody>
</table>

(ii) Gains recommended results of N* in not more than two subject for the subjects where the total number of hours is not more than 6 hours/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/week in the \( i \)th subject, \( z_i \) is the rating in the \( i \)th subject.

(ii) 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/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 to enter 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:

<table>
<thead>
<tr>
<th>Civil Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>FX982 First-year degree — full-time</td>
</tr>
<tr>
<td>FX992 First-year degree — part-time</td>
</tr>
<tr>
<td>FC984 Second-year degree</td>
</tr>
<tr>
<td>FC986 Third-year degree</td>
</tr>
<tr>
<td>FC988 Fourth-year degree</td>
</tr>
<tr>
<td>FC989 Fifth-year degree</td>
</tr>
<tr>
<td>FC991 Part-time degree — later years (for students enrolled for semester 1 only)</td>
</tr>
<tr>
<td>FC992 Part-time degree — later years (full-year/semester 2 subjects)</td>
</tr>
<tr>
<td>FC994 Building Surveying Diploma first year</td>
</tr>
<tr>
<td>FC996 Building Surveying Diploma second year</td>
</tr>
<tr>
<td>FC998 Building Surveying Diploma third year</td>
</tr>
<tr>
<td>FC998 Building Surveying Diploma fourth year</td>
</tr>
<tr>
<td>FC992 Building Surveying Diploma part-time</td>
</tr>
<tr>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>FX982 First-year degree — full-time</td>
</tr>
<tr>
<td>FX992 First-year degree — part-time</td>
</tr>
<tr>
<td>FE984 Second-year degree</td>
</tr>
<tr>
<td>FE986 Third-year degree</td>
</tr>
<tr>
<td>FE988 Fourth-year degree</td>
</tr>
<tr>
<td>FE989 Fifth-year degree</td>
</tr>
<tr>
<td>FE991 Part-time degree — later years (for students enrolled for semester 1 only)</td>
</tr>
<tr>
<td>FE992 Part-time degree — later years (full-year/semester 2 subjects)</td>
</tr>
<tr>
<td>FE972 Telecommunication Systems Management</td>
</tr>
<tr>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>FX982 First-year degree — full-time</td>
</tr>
<tr>
<td>FX992 First-year degree — part-time</td>
</tr>
<tr>
<td>FP984 Second-year degree</td>
</tr>
<tr>
<td>FP986 Third-year degree</td>
</tr>
<tr>
<td>FP988 Fourth-year degree</td>
</tr>
<tr>
<td>FP989 Fifth-year degree</td>
</tr>
<tr>
<td>FP991 Part-time degree — later years (for students enrolled for semester 1 only)</td>
</tr>
<tr>
<td>FP992 Part-time degree — later years (full-year/semester 2 subjects)</td>
</tr>
<tr>
<td>FP382 Associate diploma first year</td>
</tr>
<tr>
<td>FP386 Associate diploma third year</td>
</tr>
<tr>
<td>FP392 Associate diploma part-time</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>FX982 First-year degree — full-time</td>
</tr>
<tr>
<td>FX992 First-year degree — part-time</td>
</tr>
<tr>
<td>FM984 Second-year degree</td>
</tr>
<tr>
<td>FM986 Third-year degree</td>
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<td>FM988 Fourth-year degree</td>
</tr>
<tr>
<td>FM989 Fifth-year degree</td>
</tr>
<tr>
<td>FM991 Part-time degree — later years (for students enrolled for semester 1 only)</td>
</tr>
<tr>
<td>FM992 Part-time degree — later years (full-year/semester 2 subjects)</td>
</tr>
</tbody>
</table>

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 equivalent subjects. Information regarding 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 into 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
Full-time
A full-time student who has not achieved a pass in all subjects (a pass outright), or has not passed by the Faculty Board on the year as a whole (a 'Faculty Pass'), may be permitted to Supplementary assessment is covered under 'Faculty passing regulations'. The period of deferment 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 the semester.
This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course.

**F.W. Green Memorial Prize**

Books to the value of approximately $50 are awarded to the student in the final year of an engineering course who submits the best Project Thesis.

**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 $1500 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

Details of the Graduate Diploma in Entrepreneurial Studies are available from the Engineering Faculty Office.

Department of Civil Engineering

The department offers a range of tertiary courses in civil engineering, including a cooperative degree, a graduate diploma and the degree of Master by research. The department also conducts a cooperative 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, usually of importance to, and funded by industry.

Continuing education courses for professional engineers are provided from time to time in selected subjects by way of short courses. The building surveying diploma is a professional course which meets the academic requirements for membership of the Australian Institute of Building Surveyors.

The department operates a mentor scheme to facilitate contact between staff and students and to provide guidance to individual students as they progress through the course. Mentors are all experienced staff members.

The department also undertakes applied research and consulting. Enquiries should be directed to the head of the department or to the Swinburne Liaison Officer.

Courses offered

Degree of Bachelor of Engineering (Civil)
Diploma of Building Surveying
Graduate Diploma in Civil Engineering Construction
Degree of Master of Engineering

Career potential

Civil engineering offers a creative career for men and women in many differing areas of service to the community.

Graduates work as planners, designers, administrators, research engineers and consultants in a wide range of specialist fields, including:

- structural and bridge engineering
- foundation engineering, geology, soil and rock mechanics
- water engineering
- transportation engineering
- construction engineering
- municipal engineering
- environmental engineering and urban planning

Their work is interesting, rewarding and challenging and offers opportunities for both indoor and outdoor work, in Australia and overseas.

Civil engineers qualify professionally by completing a tertiary course recognised by the Institution of Engineers, Australia, followed by three years of suitable professional experience.

The twelve months of cooperative 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.

Women in engineering

Civil engineering provides women with a wide choice of interesting careers. Women graduates have proved to be extremely talented and have made significant contributions to the field, both in Australia and overseas. In recent years, an increasing number of women have successfully undertaken these courses at Swinburne.

Bachelor of Engineering (Civil)

This course of study is undertaken by a cooperative 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 is 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>MP183</td>
<td>Materials and Processes</td>
<td>60</td>
</tr>
<tr>
<td>AT197</td>
<td>Communication Skills</td>
<td>30</td>
</tr>
<tr>
<td>MP106</td>
<td>Engineering 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>30</td>
</tr>
<tr>
<td>EF197</td>
<td>Introduction to Engineering</td>
<td>15</td>
</tr>
</tbody>
</table>

Total: 375

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>
<td>60</td>
</tr>
</tbody>
</table>

Total: 390
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 Division 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 Diploma of Building Surveying is structured on a cooperative 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 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
Satisfactory completion of a Year 12 course of study accredited by the Victorian Institute of Secondary Education (VISE). Group 1 subjects recommended are Physics or Chemistry and a branch of mathematics.

Group 2 subjects: In addition to the recommended Group 1 subjects, Group 2 subjects may be considered.

Tertiary Orientation Program
TOP courses are considered on the basis of a course of study equivalent to a VISE Year 12 course. 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 TOP course at Swinburne College of TAFE which includes subject equivalent to the recommended VISE Group 1 subjects are given guaranteed entry.
### Course structure (1981 syllabus)

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td>AT195</td>
<td>Communications 1</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>BS196</td>
<td>Introductory Law</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>CE112</td>
<td>Applied Mechanics</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>CE171</td>
<td>Building Practice</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>CE172</td>
<td>Building Structures 1</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>ME169</td>
<td>Building Services 1</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>MP182</td>
<td>Building Materials 1</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>SM191</td>
<td>Computations</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>SP191</td>
<td>Building Science</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>360</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>360</td>
</tr>
<tr>
<td>Second year</td>
<td>AT296</td>
<td>Behavioural Studies</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>BS299</td>
<td>Financial Management</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>CE242</td>
<td>Land Surveying</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>CE252</td>
<td>Structural Design 1</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>CE271</td>
<td>Scaffolding</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>CE272</td>
<td>Building Structures 2</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>CE273</td>
<td>Practical Inspection</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>CE282</td>
<td>Geomechanics</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>CE292</td>
<td>Statutory Control 1</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>ME269</td>
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<td>CE472</td>
<td>Building Structures 4</td>
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<td>CE482</td>
<td>Geomechanics 2</td>
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<td>CE492</td>
<td>Building Law and Contracts</td>
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**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)

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<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<td>Civil Engineering Project Control</td>
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<td>CE691</td>
<td>Civil Engineering Management</td>
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</table>

**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 industry-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.

**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.
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, control, electrical power and machines.

The department offers courses leading to professional qualifications in electrical and electronic engineering. In addition, continuing education courses in selected subjects for professional engineers are provided from time to time.

Modern laboratory facilities are available for undergraduate teaching, staff research and consulting. Separate laboratories are devoted to electric circuits, electronics, advanced electronics, communications, control systems and computing, electrical machines, power systems, 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.

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

Degree of Bachelor of Engineering (Electrical and Electronic)
Degree of Master of Engineering
Graduate Diploma in Digital Electronics
Graduate Diploma in Telecommunication Systems

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 utilisation, electrical machines and appliances, electric traction, illumination engineering, communication systems, automatic control systems, electronic equipment, analogue and digital computer development and applications, and medical electronics.

The degree course qualification merits full exemption from the entrance examinations of the Institution of Engineers, Australia and the Institute of Radio and Electronic Engineers.

Bachelor of Engineering (Electrical and Electronic)

The degree course is a general electrical and electronic engineering program for the first four years, with an electrical stream and an electronic stream in year five. Both streams offer a choice of specialist electives.

Course structure (1985 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
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*Plus 15 hours in selected non-teaching periods

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<td>EE599</td>
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</table>
Electronics stream
Semester 1 Hours
EE572 Design and Project 205
EE577 Electronics 90
EE578 Communications 60
EE579 Control Systems 30
plus two electives from:
EE590 Computer Systems 45
Engineering
EE591 High Voltage Systems 45
EE592 Communications Systems 45
EE593 Electrical Machine Drives 45
EE594 Electronic Systems 45
EE596 Operations Research in 45
Electronic Engineering
EE599 Control Systems 45
Total Hours 475

Selection of electives requires approval by the head of department.

Stream in Computer Systems Engineering
The Department of Electrical and Electronic Engineering is developing a new stream in Computer Systems Engineering for inclusion within the existing degree course from the beginning of 1986. Although details will be finalised during 1985, this stream will include special computer hardware and software subjects, in addition to other essential electrical and electronic engineering subjects. It is intended to prepare engineering graduates for employment in organisations concerned with the development and application of electronic computer equipment, or in the development and application of computer software to various tasks in industry or government.

Degree conversion program 1985 syllabus
Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program.
Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.
For holders of the Swinburne 1972 Diploma of Engineering (Electrical or Electronic), special programs of study leading to the award of degree can be arranged.

Electronics stream
SP394 Engineering Physics
SM394 Engineering Mathematics
EE375 Electrical Power and Machines
EE477 Electronics and Communications
SM494 Engineering Mathematics
EE401 Industrial Experience
EE405 Semiconductor Electronics 60
EE406 Digital Logic 60
EE590 Control Systems 45
plus two electives from:
EE591 High Voltage Systems 45
EE592 Communications Systems 45
EE593 Electrical Machine Drives 45
EE594 Electronic Systems 45
EE596 Operations Research in Electrical Engineering 45
EE599 Control Systems 45

Electrical stream
SP394 Engineering Physics
SM394 Engineering Mathematics
EE475 Electrical Power and Machines
EE477 Electronics and Communications
SM494 Engineering Mathematics

Notes:
1. Usually, the above program is completed in two years of part-time evening study at an average of between eleven and twelve hours per week. The subjects are also available during the day, and students may take some day and some evening classes.
2. Exemption from EE401 Industrial Experience is granted where applicants have suitable engineering experience in industry. Formal application is required for this exemption.
3. Programs for diplomates from other institutes are considered individually.

Graduate Diploma in Digital Electronics
This part-time course is designed to provide practising engineers and scientists with the skills to assess modern digital system design. It is intended to prepare engineers and scientists with the skills to assess modern digital system design. Each participant in the course undertakes an individual design project which may be integrated with normal work commitments under certain conditions.
To gain admission to the course, applicants usually should have a degree or diploma in electrical engineering or an allied field.

Course structure (1984 syllabus)

Semester 1 Hours
EE401 Industrial Experience 60
EE570 Design and Project 60
EE575 Electrical Power and Machines 60
EE576 Electronics 60
EE579 Control Systems 60
plus two from:
EE590 Computer Systems Engineering 60
EE591 High Voltage Systems 60
EE592 Communications Systems 60
EE593 Electrical Machine Drives 60
EE594 Electronic Systems 60
EE596 Operations Research in Electrical Engineering 60
EE599 Control Systems 60

Semester 2
EE407 Switching Circuit Analysis and Synthesis 60
EE408 Input/Output Techniques 60
EE505 Integrated Circuit Components 60
EE506 Digital System Techniques 60
EE507 Digital System Applications 60
EE508 Design and Project 60

Total Hours 480

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, organising 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.

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<tr>
<th>Course structure (1983 syllabus)</th>
<th>Hours</th>
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</thead>
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<td>EE631 Electrical Power &amp; Electronics</td>
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<td>EE632 Administrative Practice</td>
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<td>EE633 Telecommunication Principles</td>
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<td>SK631 Computer Programming</td>
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<td>Semester 2</td>
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<tr>
<td>EE731 Electronics</td>
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<tr>
<td>EE733 System Planning and Control</td>
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<td>EE735 Elective Subject</td>
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**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.

**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 Engineering 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**

- Degree of Bachelor of Engineering (Manufacturing)
- Graduate Diploma in Chemical Engineering
- Graduate Diploma in Industrial Management
- Graduate Diploma in Manufacturing Technology
- Degree of Master of Engineering, by research
- Degree of Master of Engineering (Computer Integrated Manufacturing), by coursework

**Career potential**

Manufacturing/Production/Chemical engineering

Manufacturing engineers are engaged in a wide variety of industries and organisations including manufacture of aircraft, automobiles, appliances, chemicals, food, plastics, ceramics, textiles and clothing. They are also involved in goods distribution and retailing organisations.

Their activities are wide-ranging: factory management; operations and production planning; quality control; design of tooling, products and processes; materials handling; research and development.

The undergraduate programs leading to the award of the degree of Bachelor of Engineering (Manufacturing) are designed to prepare the student for a professional career in any field of manufacturing.

Developments in Australian industry, particularly towards increased productivity and the use of more sophisticated manufacturing techniques and control systems, including the use of computer-based systems, indicates that for many years the demand for manufacturing engineers will exceed the number available.

**Bachelor of Engineering (Manufacturing)**

The course is a cooperative education program of four-and-a-half years' duration and is designed to provide integrated academic and industrial training.

The course is designed to develop student abilities in the fundamental engineering sciences and technologies. It provides management training in a broad range of disciplines related to the planning and operation of manufacturing enterprises.

The course is recognised by the Institution of Engineers, Australia. Completion of the course gives full exemption from entrance examinations.
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>Year</th>
<th>Semester 1</th>
<th>Semester 2</th>
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<tbody>
<tr>
<td><strong>First year</strong></td>
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<td>SM197</td>
<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>Communication Skills</td>
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<td>MP106</td>
<td>Engineering Drawing and Graphics</td>
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*Plus 15 hours in selected non-teaching periods.

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<td>SK296</td>
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<td>Manufacturing Technology (P)</td>
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<td>Design for Manufacture (P)</td>
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<td>Manufacturing Technology (C)</td>
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<td>Design for Manufacture (C)</td>
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<td>Instrumentation and Control</td>
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<td>MP431</td>
<td>Industrial Engineering</td>
</tr>
<tr>
<td>MP421</td>
<td>Industrial Management</td>
</tr>
<tr>
<td>MP411</td>
<td>Manufacturing Systems</td>
</tr>
<tr>
<td>MP451</td>
<td>Design for Manufacture (P)</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MP413</td>
<td>Manufacturing Technology (C)</td>
</tr>
<tr>
<td>MP453</td>
<td>Design for Manufacture (C)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>375</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fifth year</strong></td>
<td></td>
</tr>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>SP531</td>
<td>Industrial Engineering</td>
</tr>
<tr>
<td>MP521</td>
<td>Industrial Management</td>
</tr>
<tr>
<td>MP502</td>
<td>Manufacturing Project</td>
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<tr>
<td>or</td>
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</tr>
<tr>
<td>MP511</td>
<td>Manufacturing Technology (P)</td>
</tr>
<tr>
<td>MP551</td>
<td>Design for Manufacture (P)</td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>MP513</td>
<td>Manufacturing Technology (C)</td>
</tr>
<tr>
<td>MP553</td>
<td>Design for Manufacture</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>475</td>
</tr>
</tbody>
</table>

*Includes a one week project at the end of semester. Value 30 hours.

### Degree conversion program 1985 syllabus

Candidates of approved standard who already hold a Diploma of Engineering may be admitted into the degree course to undertake a special program of subjects known as the degree conversion program. Such candidates should have a performance record in their original diploma course that shows their ability to complete an engineering course at degree level.

Holders of diplomas in engineering who wish to undertake a degree program should consult the head of department for details of the course to be undertaken and exemptions that may be granted.

Usually a conversion program may be completed in two years of part-time evening study at an average of eleven or twelve hours per week. The subjects are available during the day and students may take some day and some evening classes.

### Associate Diploma in Production Engineering
Details of this course are shown in the 1984 Handbook

### Graduate Diploma in Biochemical Engineering
Details of this course are shown in the 1985 Handbook
Graduate Diploma in Chemical Engineering

This is a part-time course intended to provide a basic knowledge of chemical engineering for graduates in either applied science or engineering. It is designed for those working or intending to work in the chemical industry.

The course is planned to be completed in two-and-a-half years (five semesters) of study which includes evening classes and one afternoon class per week throughout the academic year of thirty weeks.

Course structure (1983 syllabus)  

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME729 Fluid Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>MP711 Mass Transfer</td>
<td>90</td>
</tr>
<tr>
<td>MP712 Unit Operations 2</td>
<td>90</td>
</tr>
<tr>
<td>MP721 Chemical Engineering Design 1</td>
<td>90</td>
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<tr>
<td>MP722 Slagwise Processes</td>
<td>60</td>
</tr>
<tr>
<td>MP723 Heat Transfer</td>
<td>60</td>
</tr>
<tr>
<td>MP724 Chemical Engineering Design 2</td>
<td>75</td>
</tr>
</tbody>
</table>

Note:  
1. MP731 and ME729 are alternative courses required to be studied by students qualified in engineering and chemistry respectively.
2. The student may elect to study either MP724 or MP751.

Graduate Diploma in Industrial Management

Entrance to this evening course is limited strictly to those who have already completed a recognised course of scientific training, such as a degree or diploma. This course is intended to meet the needs of people who wish to equip themselves for managerial responsibility in industry. Throughout the course, the greatest possible use will be made of the scientific and mathematical knowledge acquired by students in their original courses.

It comprises four compulsory subjects and three optional subjects. Students may be granted credit for any two of the subjects offered, on the basis of prior study. Where a student has grounds for credit in EP421, 423 or 424 but has already received maximum credit, permission may be given to substitute another optional subject in lieu of the compulsory one.

Admission is determined by a selection committee and applicants are advised to complete the prescribed application form and attach details and evidence of qualifications and work experience.

This course is of approximately three years' duration, part-time.

Preliminary reading


Course structure (1985 syllabus)  

An introductory subject — EP422 — is offered

EP422  
Engineering administration — evolution and nature. (Exemptions in this subject will be granted to students who have already passed an equivalent subject or whose previous training and industrial background make the subject unnecessary.)

Compulsory subjects  

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421 Applied Statistics and Operations Research</td>
<td>60</td>
</tr>
<tr>
<td>EP423 Financial Aspects of Industrial Management</td>
<td>60</td>
</tr>
<tr>
<td>EP424 Human Relations in Industry</td>
<td>60</td>
</tr>
<tr>
<td>EP426* Management Practice</td>
<td>90</td>
</tr>
</tbody>
</table>

*Management Practice is taken in the final year of the course.

Optional subjects (three to be taken)

EP425 Legal Aspects of Industrial Management | 60    |
EP431 Production Management | 60    |
EP432 Work Study | 60    |
EP433 Physical Distribution Management | 60    |
EP436 Environmental Studies | 60    |

Note:  
In any year, an optional subject may not be offered unless staff are available — and a sufficient number of students elect to enrol for the subject.

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>MP611 Production Technology 1</td>
<td>90</td>
</tr>
<tr>
<td>MP612 Production Technology 2</td>
<td>90</td>
</tr>
<tr>
<td>MP613 Production Technology 3</td>
<td>75</td>
</tr>
<tr>
<td>MP615 Production Design 1</td>
<td>60</td>
</tr>
<tr>
<td>MP62 Production Design 2</td>
<td>30</td>
</tr>
<tr>
<td>MP614 Systems Engineering</td>
<td>30</td>
</tr>
<tr>
<td>MP615 Instrumentation and Control</td>
<td>30</td>
</tr>
</tbody>
</table>

Elective subjects (one only)

EP431 Production Management | 60    |
EP432 Work Study | 60    |
SK527 Computing Techniques | 405   |

Other elective subjects may be approved at the discretion of the head of department.

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 candidature 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, 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.

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/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.

or

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.

or

3. Have qualifications and experience which, in the opinion of the Engineering Faculty Board, are of a satisfactory standard and are a suitable preparation for study in the Masters program.

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

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EE901</td>
<td>Computers and Interfacing</td>
<td>45</td>
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<tr>
<td></td>
<td>MP902</td>
<td>Advanced Computing Techniques</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>ME903</td>
<td>Advanced Control Systems and Devices</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>MP904</td>
<td>Introduction to Computer Integrated Manufacturing</td>
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<tr>
<td></td>
<td>SM905</td>
<td>Advanced Mathematical Methods</td>
<td>60</td>
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<td>240</td>
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<tr>
<td>2</td>
<td>MP911</td>
<td>Machines and Machining Systems</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>MP912</td>
<td>Manufacturing Management Systems</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>MP913</td>
<td>Computer Aided Design</td>
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<td>MP914</td>
<td>CIM Systems Design and Analysis</td>
<td>45</td>
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<td>3</td>
<td>MP921</td>
<td>Seminars on CIM</td>
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<td></td>
<td>MP922</td>
<td>CIM Project</td>
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<tr>
<td></td>
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<td>Course Total</td>
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</tbody>
</table>
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, and communication techniques, important to a professional engineer. Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue 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

Degree of Bachelor of Engineering (Mechanical) Degree of Master of Engineering Graduate Diploma in Air-conditioning Graduate Diploma in Maintenance Engineering

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.

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 allow students to select a particular emphasis for their four-and-a-half year cooperative education program.

Degree course revision

Students entering the first year of the mechanical engineering course in 1985 will be enrolled in the common first year of the cooperative course which was first introduced in 1980, and now replaces the Bachelor of Engineering (Mechanical) 1980 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)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM197</td>
<td>60</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>SP197</td>
<td>45</td>
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<td>SC197</td>
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</tr>
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<td>MP183</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 3 and 4</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM298</td>
<td>Engineering Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SC298</td>
<td>Computer Programming</td>
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<tr>
<td>ME212</td>
<td>Engineering Practices</td>
<td>45</td>
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<td>ME212</td>
<td>Applied Mechanics</td>
<td>105</td>
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<td>ME284</td>
<td>Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME222</td>
<td>Thermodynamics</td>
<td>60</td>
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<tr>
<td>ME242</td>
<td>Non-engineering Elective</td>
<td>45</td>
</tr>
<tr>
<td>ME271</td>
<td>Electronics and Measurement</td>
<td>60</td>
</tr>
<tr>
<td>ME391</td>
<td>Industrial Experience</td>
<td>24</td>
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<tr>
<td>ME391</td>
<td>Design for Industry</td>
<td>90</td>
</tr>
<tr>
<td>ME371</td>
<td>Manufacturing Technology</td>
<td>45</td>
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<tr>
<td>ME371</td>
<td>Design for Industry</td>
<td>45</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Semester 5</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME391</td>
<td>Industrial Experience</td>
<td>24 weeks</td>
</tr>
<tr>
<td>ME322</td>
<td>Energy Systems</td>
<td>60</td>
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<tr>
<td>ME322</td>
<td>Energy Systems</td>
<td>60</td>
</tr>
<tr>
<td>ME322</td>
<td>Energy Systems</td>
<td>60</td>
</tr>
<tr>
<td>ME294</td>
<td>Managerial Economics</td>
<td>30</td>
</tr>
<tr>
<td>ME271</td>
<td>Design for Industry</td>
<td>90</td>
</tr>
<tr>
<td>ME232</td>
<td>Electronics and Measurement Systems</td>
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</table>

<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Semester 7</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME391</td>
<td>Industrial Experience</td>
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</tr>
<tr>
<td>SM498</td>
<td>Engineering Mathematics</td>
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<tr>
<td>ME412</td>
<td>Mechanics of Materials</td>
<td>30</td>
</tr>
<tr>
<td>ME422</td>
<td>Energy Systems</td>
<td>60</td>
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<td>ME432</td>
<td>Machines and Controls</td>
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</tr>
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<td>ME442</td>
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<td>Design for Industry</td>
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<td>Engineering Investigation</td>
<td>30</td>
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<tr>
<td>ME441</td>
<td>Engineering Plant and Equipment</td>
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<td>MP41</td>
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<td>Decision Analysis and Financial Management</td>
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<tr>
<td>ME451</td>
<td>Technical Planning and Financial Management</td>
<td>375</td>
</tr>
</tbody>
</table>

Electives

| Me197      | Communication Skills | 30 |
| MP196      | Engineering Drawing Graphics | 45 |
| CE113      | Static Systems       | 30 |
| EE187      | Electronics, Circuits and Computing | 75 |
| ME126      | Energy Systems       | 30 |
| EF197      | Introduction to Engineering* | 15 |

*Plus 15 hours selected non-teaching periods.

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.

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<td>ME322</td>
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<td>ME232</td>
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<td>Engineering Plant and Equipment</td>
<td>30</td>
</tr>
<tr>
<td>MP41</td>
<td>Manufacturing Technology</td>
<td>45</td>
</tr>
<tr>
<td>MP484</td>
<td>Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>BS498</td>
<td>Decision Analysis and Financial Management</td>
<td>30</td>
</tr>
<tr>
<td>ME451</td>
<td>Technical Planning and Financial Management</td>
<td>375</td>
</tr>
</tbody>
</table>

Electives

| Me197      | Communication Skills | 30 |
| MP196      | Engineering Drawing Graphics | 45 |
| CE113      | Static Systems       | 30 |
| EE187      | Electronics, Circuits and Computing | 75 |
| ME126      | Energy Systems       | 30 |
| EF197      | Introduction to Engineering* | 15 |

*Plus 15 hours selected non-teaching periods.
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.

**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 the 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.

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### Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Project</td>
<td>160</td>
</tr>
<tr>
<td>Non-engineering Elective</td>
<td>45</td>
</tr>
<tr>
<td>Advanced Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>Advanced Gas Physics</td>
<td></td>
</tr>
<tr>
<td>Energy Systems</td>
<td></td>
</tr>
<tr>
<td>Thermo-Fluid Mechanics</td>
<td>60</td>
</tr>
<tr>
<td>Engineering Science II</td>
<td></td>
</tr>
<tr>
<td>Mechanical and Materials</td>
<td>60</td>
</tr>
<tr>
<td>Vibration and Acoustics</td>
<td></td>
</tr>
<tr>
<td>Instrumentation and Systems Control</td>
<td></td>
</tr>
<tr>
<td>Engineering Technology</td>
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</tr>
<tr>
<td>Advanced Design</td>
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</tr>
<tr>
<td>Numerical Continuum Mechanics</td>
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</tr>
<tr>
<td>Ergonomics</td>
<td></td>
</tr>
<tr>
<td>Engineering Management</td>
<td>60</td>
</tr>
<tr>
<td>Marketing, Law and Technological Forecasting</td>
<td></td>
</tr>
<tr>
<td>Decision Analysis and Financial Management</td>
<td></td>
</tr>
<tr>
<td>Plant Information Systems</td>
<td></td>
</tr>
</tbody>
</table>

*Approved subjects chosen from Arts or Business, see section entitled 'Engineering subject details' for information on general electives.

### 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 (1984 syllabus)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME621 Air-conditioning</td>
<td>120</td>
</tr>
<tr>
<td>ME622 Refrigeration</td>
<td>90</td>
</tr>
<tr>
<td>ME721 Air-conditioning</td>
<td>60</td>
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<tr>
<td>ME722 Refrigeration</td>
<td>45</td>
</tr>
<tr>
<td>ME731 Instrumentation and System Control</td>
<td></td>
</tr>
<tr>
<td>ME781 Project and Energy Management</td>
<td>60</td>
</tr>
</tbody>
</table>

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### Graduate Diploma in Maintenance Engineering

This part-time course is designed for those who have a qualification such as a diploma or degree in engineering and who wish to take advanced studies based on maintenance engineering and its interaction with industry in general. The course consists of four subjects taken by evening attendance usually spread over two years.

#### Course structure (1984 syllabus)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME672 Maintenance Management</td>
<td>120</td>
</tr>
<tr>
<td>ME673 Maintenance Engineering Science</td>
<td>90</td>
</tr>
<tr>
<td>ME772 Maintenance Management</td>
<td>120</td>
</tr>
<tr>
<td>ME773 Diagnostic Processes</td>
<td>90</td>
</tr>
</tbody>
</table>

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Engineering subject details

This section contains a brief description of the various subjects in all engineering degree courses, the diploma course in building surveying, and all graduate diploma courses.

It should be noted that details of subjects taught by engineering departments to students in other courses (e.g., environmental health diploma which is offered by the Applied Science Faculty) are given in the Handbook of the Faculty offering the course.

Subjects in this section are grouped in numerical order within the following codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Liberal Studies (Arts Faculty)</td>
</tr>
<tr>
<td>BS</td>
<td>Business Faculty</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>EA</td>
<td>Engineering Faculty</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>EP</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>SA</td>
<td>Applied Science Faculty</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
</tr>
<tr>
<td>SK</td>
<td>Computer Studies</td>
</tr>
<tr>
<td>SM</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Physics</td>
</tr>
</tbody>
</table>

Students should note the following definitions with regard to reading material prescribed for engineering subjects:

**Preliminary reading**

Introductory materials 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.

**AT195 Communications 1**

Two hours per week for two semesters  
Assessment is continuous

A first-year subject in the diploma course in building surveying which introduces students to techniques for developing basic skills in oral and written communication. The emphasis is on the following areas:

1. Personal and interpersonal communication skills; decision-making and problem-solving in groups; skills in thinking critically and creatively.
2. Written and diagrammatic communication; researching, compiling and written reports.
3. Practical skills including use of telephone, conducting interviews, business letters, giving instructions and public speaking.

**References**


**AT197 Communication Skills**

Two hours per week for first semester and one hour per week for second semester  
Assessment is continuous

A first-year subject in all degree courses in engineering which is designed to develop students' skills in communicating through the spoken and written word. Class activities are designed to encourage students to apply these skills both individually and within a group context. Creative thinking, decision-making and problem-solving as they relate to engineering also form an integral part of the communication process.

**Reference**


**AT293 Liberal Studies**

Three hours per week for one semester  
Assessment is continuous

A second-year subject in the degree course in manufacturing engineering.

The aim of this subject is to introduce students to the various concepts surrounding employment in a modern industrial society. As a result of this introduction, students become aware of the necessity for an interdisciplinary approach to industrial affairs.

Areas to be covered in this course are:

- Industry: personal and interpersonal communication skills applied to the work situation and applied to community relations, influence of physical setting in communication.
- Behaviour of work groups: use of learning theories in acquiring new behaviours and modifying existing behaviours. Physiological factors in our sense of well-being — stress, anxiety, drugs and food.
- Minority groups in industry: groups which are affected by technological change, the unemployed, migrant women.
- Industrial democracy: decision-making, worker participation, industrial conflict and the ways to resolve conflict, and trade unions.

Basic requirements are active participation in a seminar-type class setting and thorough knowledge of the textbook.

**Textbook**


**AT296 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 study of the introductory psychology text, the classes are focused on experiential learning. To this end active participation in the classes is required. These class seminars are focused on 'self-awareness as a basis to 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**


**AT396 Communications 2**

Two hours per week for one semester  
Assessment is continuous

A third-year subject in the diploma course in building surveying which develops further skills in specific areas of communication relevant to building surveyors.

The emphasis is on such things as: relating to the public, and to the media; work relations — working with committees, conduct and minutes of meetings, peer group relations; technical and descriptive reports, reports to councils, work diaries; job applications and interviews.

**References**

Consult with the lecturer in charge.

**AT792 Applied Psychology**

Three hours per week for one semester  
Assessment is continuous

A general elective subject in all degree courses in engineering which focuses on the learning, and on 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.

Reading guides are provided.

**AT793 Literature and Media**

Three hours per week for one semester  
Assessment is continuous

A general elective subject in all degree courses in engineering where the objective is in developing an awareness in reading and viewing modern day literature, films and television.
This 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 advertising 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.

AT794 Sociology
Three hours per week for one semester
Assessment is continuous
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 the appropriate terminology.

References
Consult with the lecturer in charge.

AT795 Law in Society
Three hours per week for one semester
Assessment is continuous
A general elective subject in all degree courses in engineering which explores the relationship between the law and the sociology 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. As a preliminary to the understanding of our society it is necessary to view the development of western society from a theoretical perspective and then to place this perspective in an historical framework.

Reading guides are provided

AT796 Technology and Society
Three hours per week for one semester
Assessment is continuous
A general elective subject in all degree courses in engineering, exploring the social impacts of mainstream and “alternative” technologies on society. The social emphasis stems from the need to increase social awareness in industrial planning. The course includes among other topics: industrial revolutions, human values in current technological practices, renewable sources of energy and “socially useful” alternative products.

References
Dickson, D. Alternative Technology. Lond., Fontana, 1974
McRobie, G. Small is Possible. N.Y., Harper and Row, 1981
Schumacher, E.F. Good Work. Lond., Jonathan Cape, 1979

AT797 Archaeology
Three hours per week for one semester
Assessment is continuous
A general elective subject in all degree courses in engineering. It has two major objectives, to introduce students to the techniques and theories of archaeology in a stimulating and practical manner; and to give students sufficient field work experience to be accredited as a full Team Member with the Victorian Archaeological Survey. The topics include among others: site recordings, photography, mapping, stratigraphy and laboratory analysis.

References
Coutts, P.J.F. The Prehistory of Victoria: a Review. VAS, 1977
Coutts, P.J.F., Frank, R.K., Hughes, P.J. Aboriginal Engineers of the Western District. Victoria, VAS, 1978

AT798 Philosophy
Three hours per week for one semester
Assessment is continuous
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.

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, including the Environmental Protection Act 1970, Environment Protection (Noise Control) Act 1975, torts, 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 the basic concepts and principles of economics as used 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 assistant.

Textbooks
Davies, J. and Hughes, S. Managerial Economics. Plym., McDonald and Evans, 1977

References
Heyne, P. Economic Way of Thinking. 4th edn, Chic., SRA, 1983

BS299 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. Basic accounting theory and practice as relevant to building works. Cost accounting and cost control methods for building projects. Business finance: the role and scope of the finance function, tools and techniques for planning and decision-making. Feasibility studies: analysis of the financial practicability of proposed development projects.

BS399 Administration1
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 develop their understanding of management problems in 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.

References

BS400 Administration2
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which further develops students’ understanding of administration and management principles. Decision-making and planning. Organisational communication. Control systems.
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 econ-omic resources of an organisation. Topic coverage will include understanding financial data, prediction of cash flow forecasting methods, resources allocation in a competitive environment, capital expenditure evaluation techniques and decision-making under varying conditions of business risk. Throughout the unit emphasis is on problem definition, alternate solution approaches and interpretation and presentation of results.

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 decisions; understand the link between 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) working capital management,
(d) cost data and short-run decision analysis,
(e) long-run investment decisions,
(f) introduction to taxation for business.

Reference

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 or field of learning, and secondly to provide students with an appreciation of particular areas of law relevant to the future practice of their profession. In pursuit of the initial objective, topics such as the nature of law, its historical origins, the institutional setting in which it is administered and the reasoning processes employed by its practitioners, are studied. An appreciation of such matters should enable engineers to bridge the communication gap which often exists between the legal and scientific communities. 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 except mechanical 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 decisions; industry economics; the structure of Australian industry and the role of industry assistance.

Textbooks
Davies, J. and Hughes, S. Managerial Economics. Plym. MacDonald and Evans, 1979

BS504 Contemporary Macroeconomics
Three hours per week for one semester
A general elective subject in all degree courses in engineering. It is intended to complement the unit BS503 Managerial Economics. No prior knowledge of economics is assumed. It is anticipated that in the course of this subject students will master a set of concepts which will help them think more coherently about the wide range of social problems that economic theory illuminates. Examination is made of those factors which determine the aggregate level of economic activity. Employment, inflation and money markets are important areas for consideration in the unit. A general framework for macroeconomic analysis is established and other topics to be treated in this unit include analysis of the components of aggregate demand, the role of money and interest rates in influencing employment and inflation, and an introduction to the significance of overseas trade. All topics are oriented to current economic experience and the relevance of monetary and fiscal policy.

Textbooks

CE112 Applied Mechanics
Four hours per week for two semesters
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: loads, reactions, equilibrium, internal forces, determinacy, superposition. Stress and strain: general load-deflection and stress-strain behaviour including elastic, plastic, strain hardening, brittle, non-linear and visous behaviour. Linear elastic parameters. Properties of materials: relevant mechanical properties (density, stress-strain behaviour, effects of temperature) of common building materials including metals, timber, rock, concrete, ceramics and plastics. Common tests to measure properties.

Behaviour of structural members: statically determinate tension members, beams, long and short columns, shafts, simple connections.

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 principles of statics and to extend these concepts to the behaviour of loaded members, simple systems and structures. Basic concepts: forces and their actions, reactions and equilibrium, pin-jointed trusses and frames, shear force and bending moments.
Stress and strain: types of stress, general relationships, linear-elastic parameters.
Performance of loaded members and simple connections: statically determinate tension members, long and short columns, circular shafts, bolted, riveted and welded joints, beam stresses and deflections.

Introduction to structural behaviour: structural types and their behaviour under load, treated in a descriptive way: stability; structural failures; structural project work.

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: carpentry and joinery, welding, plumbing 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 general principles of construction of single- and double-storey residential buildings and to develop students' written and graphic communication 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, claddings and linings, roof plumbing, joining, fireplaces and chimneys, services, tiling, glazing, painting and decorating, builders' 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.

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.
Stress and strain
Biaxial loading, principal stresses, 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, bending moment, skew bending, composite sections, inelastic bending, beam deflections (DE, moment area, virtual work).
Columns: short columns, long columns (Euler and secent equations).
Structurally indeterminate structures: stability, determinacy, compound structures, trusses, simple frames. Influence lines for beams.
Statically indeterminate structures: compound bars, continuous beams (force and slope-deflection methods).

CE231 Hydraulics
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 fluid mechanics. At the end of the course students should be able to analyse a wide range of simple water engineering problems.

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.
Introduction: principles and types of surveys, error classification and sources, detail surveys, plotting procedures and plan layout. Distance measurement: chaining equipment, procedures and reductions. Principles and use of electronic distance measurement.
Levelling: construction, use and adjustment of levels, booking and reduction of levels. Contour properties, plotting and use of contour plans.
Theodolites: construction, use and adjustments of theodolites, traversing, angle reading methods, setting out of works.
Computations: computation techniques and electronic calculator use. Computations related to traverse reductions, missing parts determination, subdivision of land, road intersections and areas of various figures, circular curves, setting out, using deflection angles and tangent offsets.
Practical work: exercises related to all aspects of theory, in particular, levelling and theodolite use.

CE242 Land Surveying
Five hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to enable students to understand basic surveying techniques and legal aspects of surveys as related to building surveying practice.
Principles and types of surveys and plans. Distance measurements, levelling, angle measurement, setting out.

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 methods of engineering design and shows how structural principles are applied to the design of structural elements and simple civil engineering structures.
Basic studies: the design process, considerations affecting design, design codes.
Structural loads: types of loads, loading codes.
Reinforced concrete: elastic and ultimate strength theories for rectangular beams, one-way slabs, tee beams, columns, footings.
Steel: properties, fabrication, erection, codes, structural elements and assemblies, ties, beams, columns, connections.
Timber: properties, codes, design of members and connections.
Design studies: applications of theory and design codes to the design of structural members, connections and simple assemblies.

CE252 Structural Design 1
Four hours per week for two semesters
A second-year subject in the diploma course in building surveying, which develops in students an appreciation of the action of structural components and of complete structures and to introduce students to methods of analysis available to designers.
Behaviour of structures: the modes of structural action of the major types of structures, emphasising the relationship between deflections and internal forces and stresses for tension and compression structures, trusses, beams and frames, space structures and combined forms.
Introduction to structural analysis: introduction to the important methods of analysing redundant structures and connections and calculating structural deflections.
Structural design: the design process, design methods, stability of structures, checking of structural designs. Timber: design of structural members, assemblies and connections.
CE261 Transport Engineering
Three hours per week for one semester
A subject in the second year of the degree course in civil engineering which introduces students to the civil engineering aspects of transporta-

tion. Upon completion of the subject students will have gained a broad under-

standing of the highway and traffic elements which constitute the road system and the technology of the civil engineering aspects of the

other modes.

Traffic engineering: basic studies and surveys, traffic control devices, principles of intersection design.

Design of roads and streets: cross-section, grading and crossfall, vertical and horizontal curves, drainage, erosion control.

Stabilisation: methods, basis of design, structural materials used for build-

ings up to three storeys. Foundations, footings. Fire protection.

CE271 Scaffolding
Two hours per week for two semesters
A second-year subject in the diploma course in building surveying, designed to give students an understanding of the Act and the regula-

tions pertaining to scaffolding and the use of scaffolding.


CE272 Building Structures 2
Six hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to give students an understanding of the general principles and details of buildings with load-bearing walls up to three storeys and single-storey, wide span structures with framed or load-bearing walls.

Structural systems, basic design, structural materials used for build-

ings up to three storeys. Foundations, footings. Fire protection.

CE273 Practical Inspection
Three hours per week for one semester
A second-year subject in the diploma course in building surveying, which develops in students an understanding of the aims of site inspection and a knowledge of inspection methods.

Aims and objectives of site inspection. The organisation of the building site and areas of responsibility of various inspection authorities. Methods of inspection of foundations and structures. Prevention of unsound practices and the processes of acceptance and rejection. Inspection of remedial work. Students will visit sites and submit inspection reports.

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 stratigraphy; elementary applications of the above topics to civil engineering; practical work in mineral and rock Identification, geological mapping and determination of sequence of geological events; excursions.

Soil mechanics: General soil type, classification, compaction, soil stresses and chemis-

try. 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
Two hours per week for two semesters
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.

Soil water: permeability, effect of moisture content on strength. Founda-

tions: introduction to bearing capacity, settlement and foundation design.

Approval of foundations.

CE292 Statutory Control 1
Two hours per week for two semesters
A subject in the second year of the degree course in building surveying, which introduces students to the problems involved in planning development in urban and rural environments.

The planning process: the purpose of planning, historical development of urban settlements, social effects of the built environment.

Administration of planning schemes.

Residential planning standards.

Basic surveys of planning, the use of remote sensing in urban planning.

Introduction to data bases for planning purposes.

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 deflec-

tions (virtual work, strain energy, moment distribution); approximate analysis.

CE322 Urban Planning 1
Four 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, social effects of the built environment.

Administration of planning schemes.

Residential planning standards.

Basic surveys of planning, the use of remote sensing in urban planning.

Introduction to data bases for planning purposes.

CE331 Water Engineering
Three hours per week for one semester
A subject in the third year of the degree course in civil engineering which teaches students the theory relating to water engineering systems. On completion, students should be able to analyse or design the compo-

nents of these systems.

Pump theory: use, selection and performance.

Channel flow: steady non-uniform phenomena.

Pipe systems: pressure conduits, equivalent pipes, recirculation networks, Hardy-cross analysis, water hammer.

Hydrology: rainfall and runoff, 0-index, Rational formula, unitgraph method.

Irrigation: principles.
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 surveying 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. Photogrammetry: introduction to the use of photogrammetry in engineering.
Surveying engineering surveys: introduction to cadastral surveying; tacheometric surveys using conventional and EDM techniques for the production of detail plans; volume measurement and computation.
Practical work.

CE351 Structural Design
Six hours per week for one semester
Three hours per week for two semesters for part-time students (CE355).
A subject in the third year of the degree course in 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; design in reinforced concrete. Steel: properties; failures modes; elastic design of elements and assemblies; connections. 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 principles underlying the main clauses in the codes of practice for metal structures. Steel structures code, high strength structural bolting code, cold formed steel structures code, aluminium structures code, other codes. Checking of computations for metal structure.

CE361 Transport Engineering
Four hours per week for one semester
A subject in the third year of the degree course in civil engineering which gives students a more in-depth understanding of the highway and traffic systems; transportation systems management.
Traffic engineering: traffic surveys; traffic signals, guide posts, guard fencing; introduction to vehicular headway studies; statistics, random flow, vehicular headways, exponential spacing law, applications. Road-making materials: roadstone and bitumen testing, rheology and weathering of bituminous binders, design of bituminous mixtures using the Marshall method. Flexible pavements: structure of roads, design of rigid and flexible pavements, stage construction; construction of gravel and FCR pavements.

CE372 Building Structures 3
Six hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to give students an appreciation of the general principles, structural details, and associated services for multi-storey framed buildings. Structural details, methods of construction, materials and finishes. Foundation types. Basements. Fire protection. Formwork. The building frame: concrete, steel, floors. Exterior walls. Vertical transportation systems and services. Internal construction and finishing. Roofs and parapets. Drawing practice: finished drawings and sketches of a variety of structures and details from the above topics. Written reports on selected topics requiring collection of data and library research will form part of the assessment.

CE393 Statutory Control 2
Four hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to impart to students an appreciation of those administrative procedures and principles which particularly apply to the office of a building surveyor.

CE402 Professional Projects
Three hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further.
Preparation of a written report on material submitted for a building permit or alternatively preparation and assembly of documents to be submitted for a building permit. Preparation of a written report on an approved project topic relevant to the course. Students are required to deliver a summary of their reports to their peers, academic staff and guests as a part of their assessment.

CE411 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). Matrix analysis: direct stiffness method; plastic collapse of frames: introduction to analysis of continua (finite element). Influence lines: influence lines for indeterminate beams and frames. Elastic stress analysis: fundamental elastic equations (equilibrium, strain-displacement, compatibility, rheological) for two and three-dimensional elements, applications in flexure and torsion for solid, hollow and open sections; plate bending equations.

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.
Town planning: purpose and function of planning; history of planning; neighbourhood planning; regional planning; physical and socio-economic surveys in both urban and regional planning; structure of planning in Victoria. Transport planning: introduction to transport planning; public transport systems; transportation systems management.
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. Planning law: acts and legislation governing town planning. Planning appeals: preparation for an appeal and participation in the appeals system. Urban landscaping concepts relating to permit applications. Possible developments of the approval of permits (BADAC and Bains Reports).

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. Town water supplies: quantity and pressure requirements, supply mains, balancing storage, recirculation. Storm-water drainage: urban drainage systems, retarding basins, culvert hydraulics. Irrigation: methods, soil-water relationships, quantities. Water quality: physical, chemical and bacteriological parameters. Potable water treatment: methods, theory of sedimentation and filtration. Waste-water treatment and disposal: methods and their application, loading rates.

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 the student's knowledge of structural design in steel and timber and gives students practice in the application of these principles. Design theory (45 hours)
Steel: plastic design of elements and assemblies, connections, fatigue. Concrete: prestressed concrete design, plastic design for concrete structures. Design practice (45 hours)
Excerise in concrete, steel and timber structural design, which includes the use of computer programs where appropriate.

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 of practice for concrete and timber structures and to highlight important design requirements by considering selected case histories of structural failures. Discussion of the major regulations and their underlying principles for codes and regulations for the following: Concrete structures: prestressed concrete: structural brickwork. Structural failures: brief case histories chosen to illustrate design criteria. Practical work: checking of selected structural designs.

CE472 Building Structures 4
Four hours per week for one semester

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, combined, rafts), deep foundations, settlement considerations. Site investigation: planning, sampling methods, in situ tests. Slopes: cohesionless soils, cohesive soils, total and effective stress analysis, stability chart, residual strength.

CE482 Geomechanics 2
Three hours per week for one semester

CE492 Building Law and Contracts
Four hours per week for one semester

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. Students work individually, or in small groups, under staff supervision, on a major investigation project chosen from some area of civil engineering. Projects are chosen by students, after consultation with staff, from a list developed by staff. Projects are usually associated with departmental research interests, or are proposed by cooperative employers, but can be suggested by students. They are chosen to develop students’ technical knowledge, self-educative skills and initiative, and may be limited by available departmental resources. Each project requires a literature survey, and a theoretical 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: Matrix analysis of continua; finite element methods of stress analysis. 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. Emphasis will be given to the formulation of these problems for computer solution.
Civil engineering works: fundamental principles, construction methods, cost.
Building works: fundamental principles, construction methods, cost.

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 extends students' knowledge into the field of non-steady, non-uniform flow. On completion, students should be able to apply the principles to practical problems.
A selection of topics from the following:
- Flood estimation, flood routing techniques, flood retardation basin design, reservoir yield analysis methods, ground-water flow, pressure surges in pipe systems, river engineering, ocean engineering.
- Environmental issues: global ecology, conservation versus development, resources and recycling.
- Pollution control: environmental impact assessment, discharge licensing, solid waste management, air and noise pollution. Water quality, pollution and treatment; water quality standards, surface water pollution and modelling, swimming pool water quality and treatment, wastewater reclamation.

CE532 Environmental Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering. The subject develops an appreciation of environmental issues and the role of the civil engineer in pollution control and provides the student with advanced skills in relation to water quality, pollution and treatment.
- Environmental issues: global ecology, conservation versus development, resources and recycling.
- Pollution control: environmental impact assessment, discharge licensing, solid waste management, air and noise pollution. Water quality, pollution and treatment; water quality standards, surface water pollution and modelling, swimming pool water quality and treatment, wastewater reclamation.
- CE532 offers some appreciation of the high level of experience and art required to practise in the area of geomechanics.
- Earth pressure problems, braced excavations, tie-back walls and soil anchors, introduction to soil dynamics; introduction to rock mechanics; selected topics in soil engineering; further aspects of engineering geology.

CE535 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 selection of more advanced structural design projects, chosen to emphasise interpretation of design codes and current design practices.

CE552 Structural Design
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 emphasise interpretation of current design codes and current design practices.

CE554 Environmental Engineering
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering. The subject develops an appreciation of environmental issues and the role of the civil engineer in pollution control and provides the student with advanced skills in relation to water quality, pollution and treatment.

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 and of design procedures. Assignments which require creative solutions are included.
- Students may be required to provide answers 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 gives students specialist knowledge of the operating characteristics of traffic streams, provides a more in-depth treatment of urban road and freeway design, and examines in more detail the broad field of transportation engineering.
- Road and freeway design: principles of urban road and freeway design, design of surface street systems for freeway traffic. Transportation engineering: transportation networks, introduction to transport technology, introduction to transport economics, transport legislation.
- Vehicular gap and delay theory: statistics, gap and delay theory, absorption of vehicles into passing traffic streams.
- Theory of traffic flow: traffic flow models, hydrodynamic and car-following models, applications.
- Queueing theory: application to simple case of random arrivals and exponential service distributions.

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 engineering practice in a range of construction projects and gives students a concept of cost of projects.
- Introduction: plant, materials, labour.
- Safety: equipment loss, temporary works, safety of labour.

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 geology and soil mechanics; introduces them to rock mechanics, and gives students some appreciation of the high level of experience and art required to practise in the area of geomechanics.
- Earth pressure problems, braced excavations, tie-back walls and soil anchors, introduction to soil dynamics; introduction 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 in students an understanding of the structure, function and operation of local government, and the ability to apply basic engineering principles to the types of work typically carried out by municipal engineers.
- Municipal (22% hours)
  - Local government: structure, functions and operation, finance, liaison with other authorities, introduction to powers, duties, and legal liabilities of municipal engineers.
  - Municipal engineering: design, drainage, and lighting of residential streets; municipal traffic management schemes — including case studies; municipal parking.
- Planning (22% hours)
  - Statutory planning in municipal engineering, preparation, approval and enforcement of planning schemes, permits and appeals; interim development orders: study of the hierarchy of roads in existing and new urban developments; community facilities; use of remotely sensed imagery in urban planning.

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; CP; cash flow; cost control; construction documentation; claims; variation orders; partial and final certificates; arbitration.
- Statutory Planning
  - Statutory planning in municipal engineering, preparation, approval and enforcement of planning schemes, permits and appeals; interim development orders: study of the hierarchy of roads in existing and new urban developments; community facilities; use of remotely sensed imagery in urban planning.
- Transportation
  - Theory of traffic flow: traffic flow models, hydrodynamic and car-following models, applications.
- Civil Engineering
  - Theory of traffic flow: traffic flow models, hydrodynamic and car-following models, applications.
- Geomechanics
  - Earth pressure problems, braced excavations, tie-back walls and soil anchors, introduction to soil dynamics; introduction to rock mechanics; selected topics in soil engineering; further aspects of engineering geology.

CE670 Construction Technology
Four hours per week for two semesters
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 of 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/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 which introduces students to a critical study of all aspects of a construction project.  
Construction techniques for highways, bridges, railways, airports, tunnels, pipelines, foundations, buildings, dams, water supply structures, sewerage.

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 students to a critical study of all aspects of a construction project.  
Case studies of construction projects by report, discussion, seminars and tutorials.

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 determining the profitability of projects.  
Cost control; financial control; determination of profitability; evaluation of projects; evaluation of sources of finance; evaluation of tenders; productivity monitoring.

EE187  Electronics, Circuits and Computing  
Five hours per week for first semester and three hours per week for second semester  
A first-year subject in all degree courses in engineering.  
Electronic systems: concepts, engineering units and prefixes, and information, analogue and digital signals.  
Fundamental concepts: Ohm’s law, Kirchhoff’s laws.  
Ideal circuit elements: resistance, inductance, capacitance.  
Analogue electronic circuits: models for ideal amplifiers.  
Pulse and switching circuits.  
Digital electronic concepts.  
Elements of microcomputers.  
Linear circuit analysis methods.  
Electromechanical devices and control systems.  
Sinusoidal circuit analysis.  
Transformers.  
Computer programming: operating system familiarisation.  
Text editor familiarisation.  
Programming philosophy.  
Elementary programming in BASIC.

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 and electronic engineering.  
Introduction to design methods.  
Electrical, magnetic and physical properties of electrical materials.  
Design of electrical apparatus and components including transformers, heat sinks, inductors, coils, magnetic circuits and electromagnetic devices.  
Field plotting techniques.  
Analysis and design testing of amplifiers and power supplies.  
Introduction to Computer Aided Design.  
Computer components and techniques.  
BASIC & FORTRAN language applications to electrical design.  
Advanced BASIC programming and FORTRAN programming.  
Applications in electrical design.

EE282  Communication Principles  
Four hours per week for one semester  
A second-year subject in the degree course in electrical and electronic engineering.  
Communication systems: guided and unguided transmission systems, measures of channel performance, modulation techniques and spectrum management.  
Analogue modulation techniques: AM, SSB, FM, PM, stereo broadcast.  
Noise and fidelity.  
Digital modulation techniques: PAM, PWM, PCM, Delta M.  
Multiplexing, noise and error rates. FSK and PSK.  
Information theory: selection of efficient codes for data transmission.

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.  
Three-phase circuit: analysis.  
Power calculations.  
Mutual inductance.  
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, polariisation, 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; conductance; 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; energy and forces in magnetostatic systems. Analogous systems; analogies between electrical, mechanical, incompressible fluid and thermal systems.

References

EE284 Electronic Circuits and Devices
Two hours per week for two semesters
A second-year subject in the degree course in manufacturing engineering.
Circuit theory: transfer functions, Bode diagrams, graphic solutions of non-linear networks.
Applications. Introduction to microprocessors: programming.
Overview of transducers: interpretation of output data. Classroom demonstrations and practical work.
Reference

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 force/torque expressions for singly- and doubly-excited transducers. Means of torque production.
Introduction to rotating machinery: construction and principles of operation of three-phase induction machines, direct current machines and synchronous machines.
Measurement principles, accuracy and precision, errors, gross systematic and random.
Reference
Bell, D.A. Electronic Instrumentation and Measurements. Reston, 1983

EE287 Electronics
Four hours per week for two semesters
A second-year subject in the degree course in electrical and electronic engineering.

References

EE357 Electrical Design
Three hours per week for one semester
A third-year subject in the degree course in electrical and electronic engineering.
Computer-aided design: DC, transient and frequency analysis of networks by computer, device modelling, sensitivity analysis, optimization techniques.
Reliability, probabilistic reliability theory, designing for reliability. Human engineering, anthropometry, man-machine compatibility and interaction.
Project work.
References
Grant, E.L. and Leavenworth, R.S. Statistical Quality Control. 4th edn, N.Y., McGraw-Hill, 1972
Selected Australian, British, DEF (Aust) and MIL Standards

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, conformal transformation, finite difference: multiple conductor systems, partial and total capacitance, self and mutual inductance, per phase inductance in polyphase systems. Electromagnetic wave propagation: Maxwell equations, Helmholtz equations and solutions for perfect dielectric and ideal conductor; TEM plane waves, wave impedence, phase and group velocity, Poynting theorem and Poynting vector; plane wave penetration in good conductors; reflection and refraction of plane waves at boundaries between dielectrics and conductors; 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 methods; 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, equivalent circuits; capability diagram; interconnected machines, induction machines; equivalent circuit; performance characteristics; effect of rotor resistance; starting and speed control.
References
Say, M.G. Alternating Current Machines. 4th edn, Lond., Pitman, 1976
EE387 Electronics and Communications

Five hours per week for one semester

A third-year subject in the degree course in electrical and electronic engineering.

Analog electronics including operational amplifiers, D/A, AID conversion, data acquisition, active filters.

Digital electronics including LSI devices, microcomputers and digital signal processing.

Communications electronics with an emphasis on the electronics of quantisation of signals, compression and expansion of signals, PCM and DM systems, mixers and modulators.

References


Smit, G. Telecommunication Systems. Units 5 and 6, Milton, Keynes, The Open University, 1978

EE389 Linear Control Systems

Four hours per week for one semester

A third-year subject in the degree course in electrical and electronic engineering.

Introduction to systems and control concepts. The effect of feedback.


The 2nd order system. Time domain and frequency response methods. Stability of linear systems. State variables and the state model.

Introduction to feedback control systems. Analysis of simple systems using time domain and frequency response methods. Examples of electro-mechanical and hydraulic control systems.

References


EE405 Semi-conductor Electronics

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.


References


EE406 Digital Logic

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

Logic gate functions: introduction in the basic logic gate function, and the synthesis of simple logic circuits. Boolean algebra; use of Boolean algebra in logic function description and analysis; inverting and non-inverting logic; relationship with truth tables.

Binary arithmetic: binary numbers, addition, subtraction; positive and negative numbers; binary and binary-coded decimal; other binary codes. Combinational logic: analysis and synthesis of combinational logic functions; Karnaugh maps and minimisation; comparators, decoders, encoders, multiplexers, half and full adders.

Sequential logic: RS flip-flops; gated and clocked RS, D, and JK flip flops; applications to shift registers, counters; theory of unclocked and clocked sequential circuits.

Introduction to microprocessor microprocessors

References


Rowe, J. An Introduction to Digital/Electronics. 3rd edn, Syd., Electronics Australia, 1978

EE407 Switching Circuits Analysis and Synthesis

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

Transistors and diodes as switches: circuit models for diodes, bipolar transistors, and FETs in switching circuits; static analysis of switching circuits; clipping and clamping.

Bistable, monostable and astable circuits; analysis and design of bistable, monostable and astable circuits; simple triggering methods; saturating and non-saturating circuits; hysteresis and Schmitt trigger. Switching speed: the factors limiting switching speed; methods of improving speed; saturating and non-saturating circuits; Basic logic gates: characteristics: simple diode and transistor logic gate circuits; loading, fan out, logic levels and level shifting, noise margin, propagation delay; threshold logic circuits.

Reference


EE408 Input/Output Techniques

Four hours per week for one semester

A subject in the graduate diploma course in digital electronics.

Digital to analogue and analogue to digital conversion: digital to analogue converters; switched resistor networks, tolerances, accuracy, linearity, speed; multiplying D/A converters; analogue to digital conversion techniques: successive approximation, parallel, and counter ramp converters; analogue multiplexing and demultiplexing. Impugn transducers: electronic characteristics of common analogue transducers: capacitive, electromagnetic, optical, piezoelectric thermocouple and resistive transducers; transducers with digital output; electromechanical switches, keyboards. Power output devices: power switching devices and circuits; AC and DC switching; isolation between small and signal and power circuits; inductive loads. Visual readout: optical readout devices; seven-segment and dot matrix alphanumeric displays; CRT displays. Data storage systems: introduction to active memory device; magnetic core and magnetic surface memory; magnetic bubble memory.

References


EE445 Electrical Design

Three hours per week for one semester

A fourth-year subject in the degree course in electrical and electronic engineering.

EE475  Electrical Power and Machines
Five hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.
Network equations: matrix methods; load flow studies, symmetrical faults; symmetrical components and unsymmetrical faults. Single phase motors and other small machines; characteristics and performance; AC commutator machines; advanced topics for DC machines. Parallel operation of machines.
Solid state control: rectification and inversion; commutation; harmonics; triggering circuits.

References

EE477  Electronics and Communications
Five hours per week for one semester
A fourth-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: introduction to synchronous finite state machines; microprocessor: review of 8085, specialist support devices — interrupt, DMA, timer, USART, keyboard/display controllers.
Impulse response: review of transmission line equations, quarter wave transformers, single and double stub matching; microwave devices, waveguides, measurements; fibre optic systems and components.

References

EE489  Control Systems
Four hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.

References

EE475  Electrical Power and Machines
Five hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.
Network equations: matrix methods; load flow studies, symmetrical faults; symmetrical components and unsymmetrical faults. Single phase motors and other small machines; characteristics and performance; AC commutator machines; advanced topics for DC machines. Parallel operation of machines.
Solid state control: rectification and inversion; commutation; harmonics; triggering circuits.

References

EE477  Electronics and Communications
Five hours per week for one semester
A fourth-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: introduction to synchronous finite state machines; microprocessor: review of 8085, specialist support devices — interrupt, DMA, timer, USART, keyboard/display controllers.
Impulse response: review of transmission line equations, quarter wave transformers, single and double stub matching; microwave devices, waveguides, measurements; fibre optic systems and components.

References

EE489  Control Systems
Four hours per week for one semester
A fourth-year subject in the degree course in electrical and electronic engineering.

References

EE506  Digital System Techniques
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
An exploration of the techniques applicable to digital systems including addressing, bussing, multiplexing, serial and parallel data transmission. The design of sequential-state machines and digital computer systems. The use and impact of microprocessor-based systems, using the above techniques, will be considered.

References

EE507  Digital System Applications
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
A study of digital systems design problems using the techniques developed in the previous three semesters. The choice of parallel or serial signals, use of standard components, hardwired logic, ROMs, and microprocessors. Interfacing and timing, synchronous and asynchronous systems.
Applications are selected from the fields of: timing and counting, displays, control, communication, logic sequencing and signal transmission and reception.
Opportunity is provided for students to design systems relevant to their own area of specialist interest.

References

EE508  Design and Project
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics.
Individual design projects undertaken by participants under supervision. Each project entails setting of specifications, system design, choice of components, testing and reporting performance. Each participant in the program presents a seminar and a formal written report on the completed design.
Project topics are selected by participants in consultation with staff supervisors. Design projects may be integrated with the participant's normal work program, but must be approved by a supervisor before commencement.

EE570  Design and Project
Two hundred and five hours over nineteen weeks
A final-year subject in the electrical 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
McColl, G.D. The Economics of Electricity Supply in Australia. MUP, Carlton, 1976
Thomas, A. Human Activity Systems. Milton, Keynes, The Open University, T242 3, 1974

EE572 Design and Project
Two hundred and five hours over nineteen weeks
A final-year subject in the electronics 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
Thomas, A. Human Activity Systems. Milton, Keynes, The Open University, T242 3, 1974

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.
Power system stability and control: dynamic and transient stability.
AC machine transients: the synchronous machine: transformations, the dqg model. Short-circuit analysis. The three phase induction motor, space-phasor analysis, starting and re-connection transients. Fault current contributions.

References
Kovacs, P.K. Transient Phenomena in Electrical Machines. N.Y., Elsevier, 1984

EE576 Electronics
Four hours per week for one semester
A final-year subject in the electrical stream of the degree course in electrical and electronic engineering.
Single chip microcomputers and their applications in power engineering (e.g. protection) (8051 family).
Analogue instrumentation and signal transmission practices.
Analogue data acquisition. ADC conversion, and digital data processing.
Data communications and interfacing. Basic serial data transmission standards, line driving and receiving.

References
Ramshaw, R.S. Power Electronics: Thyristor Controlled Power for Electric Motors. Lond., Chapman and Hall, 1973

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 loop characteristics, performance and applications; noise performance of electronic systems.
Digital electronics: single chip and 16 bit microcomputers and applications; support; mixed logic and dependency notation; programmable logic devices; systematic design of digital systems; techniques for high speed complex logic.

References
Gardner, F.M. PhaseLocked Techniques. 2nd edn, N.Y., Wiley, 1979

EE578 Communications
Four hours per week for one semester
A final-year subject in the electronics stream of the degree course in electrical and electronic engineering.
Data transmission: moderns, modulation methods, interfacing, line conditioning, multiplexers and concentrators, switched and leased lines, Data, CO/TTT standards, protocols, bit and byte oriented protocols, BSC, HDLC, SNA, ISO models, public data networks, AUSTPAC, DDN, ISDN.
Antennas and propagation: linear dipole H, array VHF and aperture microwave antennas. Propagation characteristics from HF to microwave.
Optical communications: sources, detectors, fibres, system design of fibre optic systems, free-space links, computer techniques.
Filter analysis and synthesis: filter approximations, Butterworth, Chebychev and elliptic functions, impedance and frequency scaling, introduction to active filter synthesis.

References

EE579 Control Systems
Two hours per week for one semester
A final-year subject in the degree course in electrical and electronic engineering.
Optimal control: static and dynamic optimisation, review optimisation theory and techniques, time optimal control, optimal control of a steady state process.
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, digital control algorithms.

References

EE579 Control Systems
Two hours per week for one semester
A final-year subject in the degree course in electrical and electronic engineering.
Optimal control: static and dynamic optimisation, review optimisation theory and techniques, time optimal control, optimal control of a steady state process.
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, digital control algorithms.

References
EE590  Computer Systems Engineering
Three hours per week for one semester
A final-year elective subject in the degree course in electrical and electronic engineering.
Packaged computer user interface—standard features, facilities for custom packages; bulk storage devices, drives, input/output interfaces; human interface; architectures and their characteristics; networking concepts and techniques; programming languages for dedicated computers; design of computer-based products.

References
Oakley, S. FORTRAN for Micros. Newnes, 1984

EE591  High Voltage Systems
Three hours per week for one semester
A final-year elective subject in the degree course in electrical and electronic engineering.

References

EE592  Communication Systems
Three hours per week for one semester
A final-year elective subject in the degree course in electrical and electronic engineering.
Computer communications analysis and design
Topology, access methods, random access methods, baseband and broadband local area networks.
Antennas and propagation
Advanced topics in computer design and analysis of antennas, navigational aids, radar.
Satellite communications
Space segment characteristics, EIRP, Q/T, transponder characteristics, link budget, earth station characteristics, AUSSAT, INTELSAT.

References
Aussat Pty, Ltd, Network Designer’s Guide. 1984

EE593  Electrical Machine Drives
Three hours per week for one semester
A final-year elective subject in the degree course in electrical and electronic engineering.

References
Murphy, J. D. Thyristor Control of AC Motors. Oxford, Pergamon Press, 1971
Ramshaw, R.S. Power Electronics Thyristor Controller Power for Electric Machines. Lond., Chapman and Hall, 1973
AS1359 General requirements for Rotating Electrical Machines. Standards Association of Australia

EE594  Electronic Systems
Three hours per week for one semester
A final-year elective subject in the degree course in electrical and electronic engineering. Digital filters: Z transforms, filter realisations, S-Z transforms. Analogue techniques: transversal filters, CCDs, CSRs. Digital hardware techniques: custom ICs (gate arrays, VLSI-MPCs); large system testing including signature analysis.

References
Peatman, J.B. Microcomputer Based Design. N.Y., McGraw-Hill, 1977

EE596  Operations Research in Electrical Engineering
Three hours per week for one semester
A final-year subject in the electrical power 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.
A selection of topics from: linear programming, Markov processes, queuing theory, dynamic programming, network analysis, simulation. Case studies in the application of operations research techniques to electrical engineering.

References

EE599  Control Systems
Three hours per week for one semester
A final-year elective subject in both streams of the degree course in electrical and electronic engineering.

References
EE631 Electrical Power and Electronics
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.
Electrical energy sources. Electrical circuit elements. AC and DC circuit theory and measurements.

References
Bell, E.C. and Whitehead, R.W. Basic Electrical Engineering and Instrumentation for Engineers. Lond., Crosby Hall, 1977

EE632 Administrative Practice
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.

References
Ainsworth, F.R. Modulation. Lond., Edward Arnold, 1973

EE633 Telecommunication Principals
Six hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.

References
Conor, F.R. Antennas. Lond., Edward Arnold, 1972
Conor, F.R. Modulation. Lond., Edward Arnold, 1973

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 monitoring 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 816/32 bit processors. Introduction to optoelectronics in telecommunications. Telecommunications test equipment.

References
Bell, D.A. Electronics Instrumentation and Measurements. Reston, 1983
ISBN 0-8359-1669-3

EE732 System Planning and Control
Six hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.

References
Selected Australia, British, DEF (Aust) and MIL Standards.

EE733 Telecommunications Systems
Six hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.

References
Sonninenberg, G.J. Radar and Electronic Navigation. 5th edn, Lond., Newnes-Butterworths, 1978

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.

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
Hayden, Microprocessor Basics. Elphick Sinnema. Digital Analogue and Data Communications. Reston, VA, 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. IE Aust., 1981

EP421 Applied Statistics and Operational Research
Two hours per week for two semesters
Assessment by test and class assignment
A subject in the graduate diploma course in Industrial management.
Statistics: frequency-distribution; distribution of means, confidence levels and tests for significance; probability theory, quality control. Operational research: origins and history of general principles and techniques as applied to management; mathematical programming; linear programming; inventory control techniques; queuing theory; simulation; replacement theory; network analysis.

References
Haldane, H.J. An Introduction to Statistical Methods, Melb., Macmillan, 1960

EP422 Engineering Administration
Two hours per week for two semesters
Assessment by test and class assignments
An introductory subject in the graduate diploma course in industrial management.
Organisation and management: historical survey; types and purposes of organisations; roles of management. Organisation structures and relationships to planning; directing, communicating and controlling. Organisation structures: division of labour; job definitions; departmentalisation. Functions in industry. Financial forecasting; control of production; materials supply; personnel management; work study. Industrial legislation: historical survey; federal and state legislation; workers compensation; wage systems.

References
Byrt, W.J. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974

EP423 Financial Aspects of Industrial Management
Two hours per week for two semesters
Assessment by examination and class assignments
A subject in the graduate diploma course in industrial management.

References
Mathews, R.L. The Accounting Framework. 3rd edn, Melb., Cheshire, 1971

EP424 Human Relations in Industry
Two hours per week for two semesters
Assessment by examination and class assignments
A subject in the graduate diploma course in industrial management.
General psychology and the individual: awareness and interpretation of the environment; motivation and behavioural patterns. Industrial psychology: individual differences; selection and training of employees; physical conditions of work. Social psychology of groups; behaviour patterns, morale, group leadership. Industrial relations; machinery; trade unions; employees' associations; conciliation and arbitration; collective bargaining. Job enrichment and participation.

References
Fraser, J.M. Psychology: General Industrial, Social. 3rd edn, Lond., Pitman, 1971
EP425 Legal Aspects of Industrial Management
Two hours per week for two semesters
Assessment by a three-hour examination
An optional subject in the graduate diploma course in industrial management.
Introduction: Industrial law and its relation to general law; Australian law and its relation to international law. Employment relations, Australian and international; introduction to Australian courts, contract law as it applies particularly to employment, selling, and to industrial projects. Commercial and company law as it applies particularly to principal and agent, insurance, negotiable instruments, taxation, company formation, etc. Factory law and allied topics. Conciliation and arbitration law. Restrictive trade practice.
References
Keating, D. Law and Practice of Building Contracts, including the Law Relating to Architects and Quantity Surveyors. 3rd edn, Lond., Sweet and Maxwell, 1969
Sykes, E.J. The Employer, the Employee and the Law. 3rd edn, Syd., Law Book Co., 1973

EP426 Management Practice
Three hours per week for two semesters
Assessment: there will be no examination in this subject but the work done by students throughout the course will be assessed for examination purposes. Several assignments are submitted.
A subject in the graduate diploma course in industrial management which is designed to draw together the benefits gained from the fundamental management topics. It also aims to develop further each student’s understanding in the fields of personal relationships, thinking, research and communications with the use of case histories, lecturettes, management games, etc. Present management practices and some likely future trends are discussed. This subject is taken in the final year of the course. Emphasis is on marketing and personnel aspects not covered in the course.
Textbook

References
Drucker, P.F. Management: Tasks, Responsibilities, Practices. Lond., Heinemann, 1974
Humble, J.W. Management by Objectives. Lond., Gower Foundation, 1972
Yuill, B. Developing Managers in Organisations. Syd., Wesley, 1975

EP431 Production Management
Two hours per week for two semesters
Assessment by examination and class assignment
An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
The subject covers aspects of production management as related to the manufacturing process. Production: factors of: management techniques; methods of production; process of control; documentation and control procedures; costing procedures and analysis of: planning procedures; machine selection and replacement. Modern trends: principles of automatic controls; effects of automation; computer control of production; operational research techniques as applied to production. Group technology.
Textbook

References

EP432 Work Study
Two hours per week for two semesters
Assessment by tests, contribution to class discussions, plus nominated assignments
An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
The subject covers the principles, objectives and application of work study in the achievement of higher production within all types of business enterprise. While special emphasis is placed on methods analysis, task simplification and work measurement techniques, the course will also outline a number of associated disciplines such as plant layout, materials handling, logical thinking, feasibility studies, incentives and balanced labour levels related to budget and scheduling commitments. The use of work study as a means to the effective utilisation of resources generally and particularly materials, is further defined.
References

EP435 Physical Distribution Management
Two hours per week for two semesters
Assessment by assignments, case studies and tests
An optional subject in the graduate diploma course in industrial management which covers the planned scientific approach to decision-making in the areas of site selection, distribution, packaging, materials handling, etc.
Operations research techniques are applied to warehousing, inventory systems, forecasting systems, ordering systems. Evaluation of materials handling plant. Comparison of transportation systems.
References
Atwood, P. R. Planning a Distribution System. Lond., Gower Press, 1971
Smykay, E.W. Physical Distribution Management. 3rd edn, Lond, and N.Y., Macmillan, 1973

EP436 Environmental Studies
Two hours per week for two semesters
Assessment by project and test
An optional subject in the graduate diploma courses in industrial management and manufacturing technology.
Ecology and the effects of environmental imbalance. A detailed examination of the managerial implications of air, water and earth pollution. Noise and waste legislation. Preventive measures. A large segment of the course is devoted to the completion of an appropriate project.
References
Meadows, D. Limits of Growth. Lond., Earth Island, 1972

ME126 Energy Systems
Two hours per week for first semester and four hours per week for second semester, including lectures, tutorials and laboratory work
A first-year subject in all degree courses in engineering. The subject is divided into three parts: thermodynamics, engineering dynamics and an introduction to mechanical engineering.

Thermodynamics
Engineering dynamics
A first course in the elementary theory of dynamics with application to the mechanics of machines. Review of fundamentals with examples of application of hoots, vehicle dynamics and general dynamics. Newton's laws, impulse-momentum, work and power, conservation of momentum and conservation of energy. Motion about a fixed axis, angular concepts of impulse, momentum and kinetic energy. Applications to machine elements: crank effort diagrams, flywheels, fluctuation of speed and energy, Friction, Cone, plate and centrifugal clutches. Brakes, band and shoe brakes. Belt drives, flat and vee section belts. Gear trains. Dynamometers.

Introduction to mechanical engineering
A series of lectures, films and equipment demonstrations covering other aspects of mechanical engineering.

References
Joel, R. Basic Engineering Thermodynamics. 3rd edn. Lond., Longmans, 1978

ME169 Building Services 1
Three hours per week for two semesters
A first-year subject in the diploma course in building surveying designed to provide students with an understanding of the basic principles and practice of various specialist services relevant to buildings.

Ventilation and heating. Principles, equipment, inspection and maintenance, regulations and standards, AS 1662.2
Fluid flow: introduction to incompressible flow in ducts and pipes, Bernoulli equation.
Hot water services: distribution systems, heaters and boilers, steam lines. Solar heating. Inspection and maintenance regulations.
Personal movement systems: lifts, escalators, walkways.
Ergonomics: effects of features of building services on human performance and comfort, special arrangements for the physically handicapped, system effects of various services, noise protection.

Electrical services: basic principles of electrical circuits and devices including generators, transformers, transistors and distribution, special characteristics. Power and reactive volt-amperes.

ME219 Applied Mechanics
A second-year subject in the degree course in manufacturing engineering.
The syllabus is divided into three parts:

Solid mechanics
A course of sixty hours involving treatment of combined loading, differential methods of beam analysis, Mohr's circle for bi-axial stress, strain gauge, stress concentration, fatigue, dynamic stresses, dimensional analysis.

Machines
A course of sixty hours involving treatment of linear and angular systems, conservation of energy and momentum, impulse, force and forced single degree of freedom vibration.

Fluid mechanics
A course of thirty hours involving treatment of fluid properties, fluid statics, fluid dynamics, measuring devices, boundary layers, flow and pressure drop in pipes, the external characteristics of pumps.

ME221 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.


ME222 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

The syllabus deals with digital electronics and microcomputers. Basic digital devices — logic gates, combining logic gates; flip flops and latches; multiplexer and demultiplexer; 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; thermocouples, piezo-electric, photoelectric, optical, resistive, capacitive, inductive. Communications—modulation—amplitude, frequency and pulse code. Motors—DC motors and AC/DC motors.

References
Smith, R.J. Electrical Devices and Systems. 3rd edn., N.Y., Wiley

Instrumentation and measurement systems
A laboratory/tutorial intensive course in the principles and application of instrumentation for the measurement of physical parameters in engineering.

The syllabus deals with the principles of measurement of displacement, time, velocity, force, pressure, flow-rate, density, and temperature. Transducing elements for conversion among mechanical, thermal and electrical quantities, including analysis of the performance of electro-mechanical, capacitance, piezo-electric, resistance, inductance, and thermo-electric transducers.

Analysis of the performance of electro-mechanical transducers; input/output characteristics of transducers; compatibility of transducers, amplifiers, measuring circuits and recorders in measuring systems.

References
Arthur, K. Transducers and Measurements. Tektronix, USA

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 man-machine systems and human characteristics of size, shape, anatomy and physiology.

Design of experiments involving people: principles of biomechanics applied to tools and controls: information, systems and displays: the effects of heat stress, noise, lighting, acceleration and vibration on human performance.

References
Diffrient, N., et al. Human Scale 1, 2, 3, 4, 5, 6, 7, 8, 9. Cambridge, MIT Press, 1974-81
Grandjean, E. Fitting the Task to the Man. Lond., Taylor & Francis, 1962
McCormick, F. J. and Sanders, M.S. Human Factors in Engineering and Design. 5th edn., N.Y., McGraw-Hill, 1982

ME261 Engineering Practices
Three hours per week for two semesters, including lectures, workshop and industrial visits

A second-year subject in the degree course in mechanical engineering. This course provides treatment of the role of trades and practices, industrial safety, machine shop, welding and fabrication, plumbing and sheetmetal, electrical systems.

ME269 Building Services 2
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. Thermal equipment and human loads. Insulation. Solar heating, passive and active. Smoke control, AS1666/1. Speciality services: including reticulated compressed air, vacuum lines, standby generating sets, fuel services, garbage disposal, security. Provisions for controls, adjustments, inspections and maintenance.


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 engineering design and to develop abilities of engineering analysis and synthesis of components, and elementary systems.

Graphical techniques and applications, design methodology, modelling of design systems, design of components, features and application of mechanical components, simple systems selection, analysis and specification. Static and fatigue failure. Australian standards and codes.

References
Deutschman, A.D., Michels, W.J. and Wilson, C.E. Machine Design — Theory and Practice. N.Y., Macmillan, 1975

ME312 Mechanics of Materials
Two hours per week for one semester

A third-year subject in the degree course in mechanical engineering.


References

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, frequency response; multi-degree of freedom, Dunkerley, Rayleigh and Holzer methods; balancing and whirling; mechanisms.

Solid mechanics
Theories of elastic failure, unsymmetrical bending, plasticity, experimental stress analysis.

References
ME322 Energy Systems
Four hours per week for one semester
A third-year subject in the degree course in mechatronic 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; Radiation; Combustion; IC engine characteristics; laminar and turbulent flow.

References

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, pipework systems; characteristics of pumps and fans, effect of blade orientation, cavitation. Net positive suction head; positive displacement machines; methods of control.

References

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 mechanics 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, cams 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; representation 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, 5 plane, stability and root locus. Harmonic response H(w), amplitude and phase, representation by Bode and Nyquist plots. Applications to lower order linear systems.

References

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
Piercy, B. and Jandrell, R. Coordinated Work Measurement. Lond., Camelot Press, 1975

ME371 Design for Industry
Three hours per week for one semester, including lectures, laboratory and tutorial work
A third-year subject in the degree course in mechanical engineering which enables students to gain experience and proficiency in more complex aspects of mechanical engineering design and specification of integrated systems.

Functional systems analysis and matching, specification and selection of commercial components and sub-systems, application of standards to design computations. Mechanical design of pressure vessels, machine frames and bases, hydraulics and pneumatics, economics of design, optimum design.

References

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 mechanics, designed to provide a foundation in the physical laws governing energy transfer and conversion, and to provide students with a logical explanation of established and developing plant and equipment.


References
Osborne, W.C. Fans. 2nd edn, Oxford, Pergamon, 1977
Shapiro, A.H. Shape and Flow. Lond., Heinemann, 1970
ME432 Machines and Controls
Four hours per week for one semester, including lectures and laboratory/tutorial work.
A four-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.

Industrial controls
Analysis and design of single variable control systems of arbitrary order by classical methods. Open and closed loop transfer 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, Levenberg algorithm and the transition matrix.

References
Church, P. A. M. Mechanical Vibrations. 2nd edn, N.Y., Wiley, 1983
Meirovitch, L. Elements of Vibration Analysis. N.Y., McGraw-Hill, 1975

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
Lewin, D. and Barber, P. Information and Skill. Lond., Methuen, 1976
Waksman, K.N. and Yuks, G.A. Organisational Behaviour and Personnel Psychology. Ill., Irwin, 1982

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 traditional 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

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 four-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
Collacott, E.A. Mechanical Fault Diagnosis and Condition Monitoring. Lond., Chapman-Hall, 1977

ME471 Design for Industry
Three hours per week for one semester, including lectures, laboratory and tutorial work.
A four-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 plant and project management systems for scheduling, controlling and allocating resources to engineering projects, including cost evaluation.

Overview of design optimisation techniques and the project engineering function.

References

ME482 Engineering Investigation
Two hours per week for one semester.
A four-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 technical report indicating technical feasibility, costing 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 fifth year of the degree course in mechanical engineering. Four 30-hour units are offered: advanced mathematics, advanced gas physics, energy systems and thermofluid mechanics. Students must take two of the four alternatives offered.

Advanced mathematics
Two hours per week of integrated instruction and practice for one semester.
A selection of topics will be made from the following list: advanced finite difference methods; classical optimisation; linear programming and queuing theory; solution of partial differential equations using Laplace equations; Fourier transforms; calculus of variations and Lagrangean dynamics; regression methods.

References
Craggs, J.W. Calculus of Variation. Lond., George Allen and Unwin, 1973
Advanced gas physics
Two hours per week; including lectures and laboratory/demonstration work.

The syllabus will develop the following subject areas: quantum mechanics, statistical thermodynamics, solid state physics, and optics (applications of lasers and holography, Doppler techniques, and fibre optics).

References

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, mixtures and psychrometry. Solar radiation and applications. Topics selected from direct energy conversion, advanced heat transfer, turbocharging IC engines and alternative automotive power units.

References
Cameron, A. Basic Lubrication Theory. Lond., Longman, 1971
Wolf, J. Heat Transfer. N.Y., Harper and Row, 1982

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, low Reynolds number flows, free surface flows.

References
Cameron, A. Basic Lubrication Theory. Lond., Longman, 1971

ME502 Engineering Science 2
Four hours per week for one semester

A subject in the fifth year of the degree course in mechanical engineering. Thirty 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.

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, rotatory discs of variable profile, thermal stresses in turbine discs. Finite element methods in stress analysis.

References
Timoshenko, S. Strength of Materials I and II. N.Y., Van Nostrand, 1966

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 $H(j\omega)$ from experimental measurements. Interpretation of the modal analysis function components. Analysis of periodic and random signals, measurements, signal processing and associated errors, transducer calibration techniques. Acoustics: sound source characteristics, sound fields, sound generation by vibration, transmission. Noise control and reduction.

References
Church, A. H. Mechanical Vibration, 2nd edn, N.Y., Wiley, 1963
Duerden, C. Noise Abatement, Lond., Butterworths, 1970
Meirovitch, L. Elements of Vibrational Analysis, N.Y., McGraw-Hill, 1975

Instrumentation and systems control
Two hours per week for one semester.

An advanced course in control applications to industrial systems and processes.

Control algorithms with application to industrial and process control systems, advanced control techniques for large-scale multivariable systems. Distributed digital systems for instrumentation and control hardware and software aspects of microprocessor based controls.

Introduction to non-linear behaviour; linearisation, the describing function method of analysis, stability analysis and compensation of non-linear systems.

References

ME503 Engineering Technology
Six hours per week for one semester

A subject in the fifth year of the degree course in mechanical engineering. Three 45 hour units are offered: ergonomics, advanced design and numerical continuum mechanics. Students must take two of the three alternatives offered.

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, buildings, computer systems, and control systems. Students are expected to undertake a study in depth and to present an oral report to the class.

References
Grandjean, E. Fitting the Task to the Man. Lond., Taylor & Francis, 1980
Keats, J.A. An Introduction to Quantitative Psychology. Syd., Wiley, 1977

Advanced design
Three hours per week for one semester including lectures, laboratory work and excursions.

Topics will be selected from: reliability and maintainability, risk engineering, computer packages, robotics, plant specification and tendering, and emerging technologies.

References

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 modelling 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 technological forecasting, decision analysis and financial management, and plant information systems. Students must take two of the three alternatives offered:
- 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 marketing trends, planning business actions, marketing policies and use of appropriate technologies.
- 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. Selection of technological and economic parameters in formulation of procedures for achieving optimum solutions, advanced techniques of predicting, evaluating and decision-making. Problem analysis techniques incorporating consideration of more qualitative decision factors.

References
Collinge, J. Law of Marketing in Australia and New Zealand, Melb., Thesaurus, 1971

ME528 Engineering Project
One hundred and sixty hours over nineteen weeks
A fifth-year subject in the degree course 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 are used 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
A subject in the graduate diploma course in air-conditioning


References
American Society of Heating, Refrigerating and Air Conditioning Engineers. ASHRAE Handbooks (Fundamentals, Systems, Applications and Equipment Volumes). Published by this Society, Atlanta, GA, USA
The Australian Institute of Refrigeration, Air Conditioning and Heating (inc), AIRAH Design Data Manual. Published by this Institute, National Science Centre, Parkville, Vic.
The Chartered Institution of Building Services. CIRSG Guide. Published by this Institution, London, 1975
The Trane Company, Tran Air Conditioning Manual. Published by the Trane Company, La Crosse, Wisconsin, USA, 1974

ME622 Refrigeration 1
Three hours per week for two semesters
A subject in the graduate diploma course in air-conditioning.


References
American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), Guide and Data Books
P.A. France

ME672 Maintenance Management
Four hours per week for two semesters
A subject in the graduate diploma course in maintenance engineering.

The function of a maintenance department within an organisation, covering financial management aspects, including budgeting, control, risk and maintenance theory including life-cycle costing and system design and effectiveness.

Fundamentals of reliability and maintainability including applications. Quantitative methods such as statistical methods, queuing theory, network analysis, simulation.

References
Davies, J.R. and Hughes, S. Managerial Economics, Plymouth, McDo- nald and Evans, 1977

ME673 Maintenance Engineering Science
Three hours per week for two semesters including lectures and laboratory work
A subject in the graduate diploma course in maintenance engineering.


References
Cameron, A. Basic Lubrication Theory. 3rd edn, N.Y., Halsted Press, 1981
ME721 Air-conditioning2
Four hours per week for one semester
Assessment by assignment, laboratory work and a test

A subject in the graduate diploma course in air-conditioning which follows on subject ME621.

References
As for ME621 Air-conditioning 1

ME722 Refrigeration 2
Three hours per week for one semester
Assessment by assignments, laboratory work and a test

A subject in the graduate diploma course in refrigeration which follows on subject ME622.

References
As for ME622 Refrigeration 1.

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. Valves characteristics, pipework systems; characteristics of pumps and fans, effect of blade orientation, cavitation, Net positive suction head; positive displacement machines; methods of control.

References

ME731 Instrumentation and System Control
Three hours per week for one semester
Assessment by assignment, laboratory work and a test

A subject in the graduate diploma course in air-conditioning.

References

ME773 Diagnostic Processes
Three hours per week for one semester
Assessment is continuous

A subject in the graduate diploma course in maintenance engineering.
Study of diagnostic and analytical methods with application to plant and equipment, covering vibration and noise, oil analysis, determination and interpretation of wear debris, thermography. Applications of these methods and setting up inspection procedures, records, trends, etc. Logical fault-finding in fluid power, electrical and mechanical systems.

References
Church, A.H. Mechanical Vibrations. 2nd edn, N.Y., Wiley, 1963
Collacot, R.A. Mechanical Fault Diagnosis and Condition Monitoring. Lond., Chapman Hall, 1977

ME781 Project and Energy Management
Four hours per week for one semester
Assessment is continuous

A subject in the graduate diploma course in air-conditioning.
Contract law, scheduling, costing, optimisation, maintenance program development. Energy source selection and life cycle costing, system optimisation. Field project of a practical nature linking the course elements of air-conditioning, refrigeration and system control and preferably involving the application of project and energy management techniques.

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.
Dynamics of controlled systems: state-space concepts, solutions to state-space equations, systems stability, Leverrier algorithm and conversion to Laplace domain, relations of state-space to classical controls. Discrete state-space theory.
Non-linear and stochastic control: phase plane methods, describing function technique, system stability, Liapunov stability methods, Ergodic random processes, auto correlation functions, power spectral density functions, response of linear systems.
Programmable control of industrial logic (PLC).
Hybrid computing and control. Hybrid computers in closed loop systems, systems simulation. Advanced control systems. Microprocessors and microcomputers in control systems.

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 and pictorial projection, freehand sketching, assembly and detail drawings, material lists, sectioning, use of scales, dimensioning and tolerances.
Graphic solution of engineering problems, bending moment and stress diagrams, layout of castings and mechanisms.
Computer aided draughting and graphics.
Special studies extend the basic studies to cover the special drawing requirements in particular fields of engineering Civil: welded and bolted structural steelwork, reinforced concrete, survey drawings. Mechanical and electrical: electrical control circuits, electronic circuits, electro-mechanical devices, electrical hardware.
Mechanical and manufacturing: machine elements, screwed fasteners, keys and keyways, limits and fits, surface finish, bearings, gearing, weld assemblies, fixtures. Assembly and detail drawings incorporating these features.
Textbook
Australian Engineering Handbook. The Institution of Engineers, Australia
References
Relevant Australian Standards

MP182 Building Materials
Two hours per week for first semester and three hours per week for second 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.

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
DeGarmo, E.P. Materials and Processes in Manufacturing. Lond., Collier Macmillan, 1979

MP211 Manufacturing Technology (P)
Three hours per week for two semesters
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, ECM, LEM, etc.
Powder metallurgy, casting, production of plastic components; power production, component design; methods of casting metals; extrusion, injection moulding and other processes.
Waste and effluent disposal: treatment of wastes from manufacturing processes — e.g. plating wastes, cutting fluids, etc.
Textbooks
Galyer, J.F.W. and Shobolt, C.R. Metrology for Engineers — SI Units. 3rd edn, Lond., Cassell, 1969

MP213 Manufacturing Technology (C)
Three hours per week for two semesters
Assessment by examination and practical assignments
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 chemicals industry and the organic chemicals industry (including both natural and mineral sources).
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, refrigeration and other compression and expansion processes.
Physical equilibrium, bubble and dewpoint relations, phase diagrams; activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing, concentration, temperatures, and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.
Textbook

MP222 Building Materials 2
Two hours per week for one semester
Assessment by assignment and examination
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, polymers used for cladding and pipe systems.
Joining methods: principles of behaviour of the different joining systems including welding, adhesive bonding, soldering, brazing, mechanical fasteners, comparative costs of various jointing methods.

MP231 Industrial Engineering
Two hours per week for one semester
Assessment by tests and class assignments
A second-year subject in the degree course in manufacturing engineering.
History, theory and practice of methods study and work measurement principles, definitions, symbols and terminology.
Introduction to charting techniques: time study; improvement procedures.
Elements of activity sampling and predetermined measurement systems. Standard performance and reward concepts. Applications of work study to manufacturing.

**Textbook**  

**MP251 Design for Manufacture (P)**  
Three hours per week for two semesters  
Assessment by assignments, project work and tests

A second-year subject in the degree course in manufacturing engineering.  
Introduction to design: methodology, decision-making, criteria of design: functionability, reliability — precision strength and endurance. Component design to suit manufacturing processes.  
Basic M/C tool design: drives, kinematic design — design features of typical machines.  
Tolerances and production standards: systems of tolerancing, gauges and inspection, geometrical tolerancing, statistical tolerances.  
Basic machine elements design: joining elements, transmission elements. Applications of Australian and overseas standards to design of special products.

**Textbook**  

**References**  
A list of references is supplied by the department.

**MP253 Design for Manufacture (C)**  
Three hours per week for two semesters  
Assessment by examination

A second-year subject in the degree course in manufacturing engineering.  
Chemical engineering computations: exercise 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; flow-sheets; stoichiometry calculations involving bypass, recycle and purge; combustion and heat engine calculations.  
General design consideration: concepts of layout, and the safety and health aspects thereof; air and water pollution control; methods of costing.

**Textbooks**  

**MP281 Engineering Materials**  
Three hours per week for two semesters  
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 chemistry to consider the science and technology of some materials as a basis for later work in manufacturing technology and design for manufacture.  
Structure, properties and treatment of: metals, ferrous and non-ferrous; polymers, thermoplastic, thermosetting, elastomeric; ceramics — crystalline and non-crystalline; composite systems. Welding and joining systems. Tribology.

**Textbook**  

**MP282 Engineering Materials**  
Two hours per week for one semester  
Assessment by assignments and examination

A second-year subject in the degree course in civil engineering.  
Extends the work covered in first year chemistry into the characteristics of materials of particular importance in civil engineering.  

**Textbook**  

**MP284 Engineering Materials**  
Three hours per week for one semester  
Assessment by assignments and examination

A second-year subject in the degree course in mechanical engineering.  
Extends the work covered in first year chemistry to the characteristics of materials of particular importance in mechanical engineering.  

**Textbook**  

**MP285 Materials and Environment**  
Three hours per week for one semester

A second-year subject in the degree course in electrical and electronic engineering.  
Metals — steels and non-ferrous.  
Polymeric materials — relationship between the material constituents, their arrangements and their electrical properties.  
Corrosion and deterioration — high strength to weight materials; non-destructive testing.  
Electrical materials — conductors, semi-conductors and insulators.  
Magnetic materials — particularly related to their design and performance.  

**Reference**  

**MP301 Instrumentation and Control**  
Two hours per week for one semester  
Assessment by tests, assignments and laboratory work

A third-year subject in the degree course in manufacturing engineering.  
Measurement and control of variables in production processes: forces, flow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrical, hydraulic and pneumatic control devices: signalling, amplification, recording and readout.

**Textbook**  

**MP311 Manufacturing Technology (P)**  
Six hours per week for one semester  
Assessment by laboratory, assignments and test

A third-year subject in the degree course in manufacturing engineering.  
Polymer: rheology — mathematical description of non-Newtonian fluids; flow on non-Newtonian liquids in a pipe; derivation of Mooney-Rabinowitch equation and temperature dependence of viscosity as described by Arrhenius equation; introduction to visco-elastic solids; application of visco-elastic models to constant and cyclic loading; definition of complex moduli and loss tangents; thermal fatigue of polymers.  
Compounding — thermodynamic theory of miscibility; effect of compounding on final properties of the material; chemical corrosion of material and environmental fracture process, statistical theory of mixing. Extruders and extrusion — description of extrusion process and extruder design; energy consumption; mathematical description of melt fracture and die swell; rheology of die flow; mathematical process of flow blowing and fibre spinning. Laboratory work.  
Metal cutting: theories of friction and wear, economics of machining, tool life equations and new theories of tool life and cutting, factors affecting machining, machinability tests-research.

**Textbooks**  
MP313 Manufacturing Technology (C)

Six hours per week for one semester
Assessment by assignments and examination

A third-year subject in the degree course in manufacturing engineering. Mass transfer theory; Fick diffusion equation; theory of diffusion; gas/liquid/solid interphase diffusion; boundary layer theory; film and overall flow coefficients; penetration theory; absorption with chemical reaction.

Concepts of HTU and NTU: experimental determination of mass transfer coefficients, wetted wall and disc columns. Chemical manufacturing techiques (1): applications of mass transfer operations such as distillation, gas absorption, liquid-liquid extraction and leaching, in chemical manufacturing; descriptions of the equipment in which these operations are carried out.

Textbooks


MP314 Manufacturing Technology

Three hours per week for one semester, including lectures, laboratory and tutorials
Assessment by tests, assignments and laboratory work

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


Byrl, W. and Masters, P.R. The Australian Manager. 2nd edn, Melb., Sun Books, 1980


MP351 Design for Manufacture (P)

Four hours per week for one semester
Assessment by assignments, projects and tests


Value analysis; Quality functionality and cost — optimum process selection. Value analysis — concept, methods of application.

Textbooks


References


Selected Australian and British Standards


Thomas, L.F. The Control of Quality. Lond., Thames and Hudson, 1965

MP353 Design for Manufacture (C)

Four hours per week for one semester
Assessment by examination

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, 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.

Textbook


MP381 Systems Engineering

Two hours per week for one semester
Assessment by tests, assignments and laboratory work

A third-year subject in the degree course in manufacturing engineering.


Textbook


MP384 Engineering Materials

Three hours per week for one semester
Assessment by assignments and examination

A third-year subject in the degree course in mechanical engineering.


MP411 Manufacturing Technology (P)

Six hours per week for one semester
Assessment by laboratory work, assignments and tests


Deformation mechanics: slip line field applied to cutting and forming problems — metal flow.

Polymers; moulding — description of various moulding processes; design of injection moulding machines; mould design; mathematical analysis of flow in extruders; mathematical analysis of flow in the injection moulds. Quality control — application of modified gas law to shrinkage of material in moulds, effect of crystallization process on final dimensions of product. Fibres and composite materials — effect of fibre spinning on final properties; description of fibre properties and application; design of composite materials; application of solid mechanics in fibre reinforcement. Welding and sealing — introduction to theory of bonding between materials; description of modern technology in bonding of materials. Polymer laboratory work.

Textbook
As for MP311.

MP413 Manufacturing Technology (C)
Six 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 (2): basic fluid/solid systems, hydraulic classification, hindered setting, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.
Power 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.
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.

Textbook

MP414 Manufacturing Technology
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. Plastic deformation studies relevant to manufacturing methods. Plasticity theory and application, slip-line fields, load bounding mathematical methods, application to forming and cutting processes.

Textbook
Rowe, G.W. Elements of Metalworking Theory. Lond., Arnold, 1979

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
Introduction to accounting, original transactions, balance day adjustments, profit determination. Financial accounting: measurement of performance, measurement of stability.

Psychology
The personnel management function, problems and practices; personal - esteem, values, defence mechanisms. Sexuality and sexism; personality studies - conditioning (classical and operant), assertiveness training.

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.

Textbook

References

MP422 Engineering Administration
Two hours per week for one semester
Assessment by test and assignments.

Textbook

References
Byrt, W. and Masters, P.R. The Australian Manager. 2nd edn, Melb., Sun Books, 1980

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. Management services: advanced work study and work analysis — direct (manufacturing), labour, office labour, distributive labour; review of methods improvement and its quantification; product, process and procedure design based on work study; advanced plant layout, models, use of computers; use of work study in construction, operation and maintenance.
Predetermined motion time systems for work measurement — work factor, MTM, MSD, Modaps; analytical estimating, work values; job evaluation; financial incentives based on work measurement; human factors in work study; management and supervisor involvement; communications, planning, scheduling, loading, materials handling, Applications of operations research to industrial engineering problems; queuing theory applied to machine interference; line balancing; allocation problems in linear programming — assignment, transportation and simplex methods; decision theory applied to machine replacement; network analysis; sequencing.

Textbooks

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: forecast- ing; operations planning; inventory and production 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.

Textbooks

MP451 Design for Manufacture (P)
Four hours per week for one semester
Assessment by tests, assignments and projects.

Textbooks
References
As for MP511 and MP351 plus
American Society of Tool and Manufacturing Engineers (ASTME). Handbook of Fixture Design. N.Y., 1962

MP453 Design for Manufacture (C)
Four hours per week for one semester
Assessment by examination and laboratory assignments

Textbooks

MP484 Engineering Materials
Two hours per week for one semester
Assessment by examination 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 testing, non-destructive testing, fracture mechanics, shape factors, radioactivity, Beer’s law.

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. The major individual 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

Metalworking laboratory
Polymer processing
Selection and costing — optimising the use of materials with respect to material properties, moulding and cost
Calendering and coating — development of mathematical model for flow between rollers. Application of model in predicting the power consumption of process. Mathematical description of melt flow in wire coating.

Textbooks
As for MP511

MP513 Manufacturing Technology (C)
Five hours per week for one semester
Assessment by examination and assignments

Textbooks

MP521 Industrial Management
Three hours per week for one semester
Assessment by examination and assignments
A fifth-year subject in the degree course in manufacturing engineering. Legal: Australian legal systems; commercial law regarding employees, employer liabilities; contract law; sale of goods; common law, criminal law and torts as they affect manufacturers; negligence; defences; industrial property (patents, etc); principal and agent; companies law; workers’ compensation, insurance. Management performance: modern theories of management; motivation; job enrichment; participation in practice; organisation development; professionalism; overseas trends; case studies. Industrial relations in Australia; collective bargaining; conciliation and arbitration; wage and salary administration; case studies.

MP531 Industrial Engineering
Three hours per week for one semester
Assessment by examination and assignments

Textbook

References

MP551 Design for Manufacture (P)
Three hours per week for one semester
A thirty-hour project in industry
Assessment by examination and assignments
A fifth-year subject in the degree course in manufacturing engineering. Computer aided design for production: machines, tools, quality control, sampling, plant design and control. Examples of programs for machine elements and tooling design.

References

MP553 Design for Manufacture (C)
Three hours per week for one semester plus a thirty hour project in industry
Assessment by examination

A fifth-year subject in the degree course in manufacturing engineering. Computer graphics including flowsheet and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer. Duhring and Cox charts, boiling point elevation, single and multi-effect evaporator systems, thermal and mechanical recompression; operation, control and economics of evaporation systems. Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries: methods of treatment and disposal; ecological considerations; legal requirements.

Project in industry: a one-week project after the examination week in July. The project is concerned with productivity improvement in chemical manufacturing.

Textbooks

MP612 Production Technology 2
Six hours per week for one semester
Assessment by assignments, tests and laboratory work

Textbooks
As for MP311

MP613 Production Technology 3
Five hours per week for one semester
Assessment by assignments, tests and laboratory work

Textbooks
As for MP311

MP614 Systems Engineering
Two hours per week for one semester
Assessment by assignments, tests and laboratory work

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 in production processes: forces, flow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrical, hydraulic and pneumatic control devices; signalling, amplification, recording and readout.

Textbook
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.

Textbooks
As for MP351

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. Tooling design for metalworking; economy and batch quantity relationship. Jig and fixture design. Cutting tools. Tool design for: sheet metal work, cold and hot forging, and die casting.

Textbooks
As for MP251 and MP351

MP711 Mass Transfer
Six hours per week for one semester
Assessment by examination and laboratory assignments
A subject in the graduate diploma courses in chemical and biochemical engineering. Theories of diffusion, boundary layer theory, penetration theory, absorption with chemical reaction. HTU and NTU, experimental determination of mass transfer coefficients. Application of mass transfer such as distillation, gas absorption, liquid liquid extraction, leaching, with descriptions of the equipment used for these operations.

Textbooks

MP712 Unit Operations
Six hours per week for one semester
Assessment by examination and laboratory assignments
A subject in the graduate diploma courses in chemical engineering and biochemical engineering. Fluid/particle systems, hydraulic classifications, hindered settling, thickening. Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying. Handling and transport of powders, powder mixing, crushing, grinding and screening. Newtonian and non-Newtonian fluid dynamics with examples drawn from plastics processing. Description and characteristics of shell and tube exchangers and alternative geometries; extended surfaces. Boilers, condensers, tube stills, furnaces etc. with examples of their application in the chemical industry.

Textbook

MP721 Chemical Engineering Design 1
Three hours per week for two semesters
Assessment by examination
A subject in the graduate diploma courses in chemical and biochemical 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.

Textbooks

MP722 Stagewise Process
Four hours per week for one semester
Assessment by examination
A subject in the graduate diploma course in chemical engineering. The concept of the equilibrium stage as applied to distillation, liquid-liquid extraction, teaching, and other mass transfer operations. Graphical and computer-based design techniques, including Lewis-Sorel, McCabe-Thiele and Ponchon-Savarit methods; batch and continuous operation. Behaviour of plate and packed columns, characteristics of packings, bubble caps, etc; flooding, hold-up and pressure drop; selection of optimum column diameter.

Textbook

MP723 Heat Transfer
Four hours per week for one semester
Assessment by examination and laboratory assignments

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 graphics including flowsheet and layout preparation; exercises in preparation of computer solutions to problems in momentum, heat and mass transfer. Duhring and Cox charts, boiling point elevation, single and multi-effect evaporator systems, thermal and mechanical recompression; operation, control and economics of evaporation systems. Examples of solid, liquid and gaseous effluents associated with chemical manufacturing and other industries; methods of treatment and disposal; ecological considerations; legal requirements.

Textbooks

MP731 Physical and Chemical Equilibria
Three 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 MP213, namely: physical equilibrium, bubble and dewpoints, phase diagrams, activity, activity coefficients, Gibbs-Duhem equation. Chemical reaction equilibria, heats of reaction and mixing; concentration and temperature and pressure dependence of rate of reaction; batch, plug flow and backmix reactors; absorption and catalysis, electrochemistry.

Textbook
MP751 Design Applications
Five hours per week for one semester
Assessment by examination
A subject in the graduate diploma course in chemical engineering. Drying, crystallisation, water cooling and humidification. Study of heat and momentum transfer as applied to a selection of soap, polymer, glass, food and similar industries. Mechanical design of pressured vessels, heat exchangers. Safety mechanisms such as safety valves and bursting discs. Routing and support of pipes, coupling methods; gland sealing on pumps and valves. Fixed and variable speed drives. Reinforced concrete; foundations; methods of holding down. Causes of failure.

Textbooks

MP902 Advanced Computing Techniques
Two hours per week for one semester plus one hour per week for one semester
Assessment by assignment and test
A subject in the master of engineering CIM course. Introduction to modern high level languages: FORTRAN, APL, ADA, PROLOG.
Operating systems design and extension designs. Data structures: stacks, queues, dequeues, linked lists, arrays, enclosed arrays, trees, networks, piles.
Algorithms: sorting, merging, connectivity, minimal path, reliability, convergence, stability.
File structures: sequential, random files, workspaces, shared variables, auxiliary processors, module linkage for programs, relocated and executable files.
Communications and protocols: handshaking, assembler structures programming, C and PLIM, SNA, SDLC, BSC, Ethernet and other network architectures, implementation of networks.

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
A subject in the master of engineering CIM course.

References
A list of references will be supplied by the lecturer

MP911 Manufacturing Management Systems
Three hours per week for one semester plus two hours per week for one semester
Assessment by assignments, projects and test
A subject in the master of engineering CIM course.
The use of APT for programming machine tools, limitations, comparison with other languages. Development of SSX and APT directives. Extension of APT for robotics.
Machine stability and adaptive control.
Robot programming and physical modelling of flexible manufacturing systems. “Hands-on” computer aided economics of machining.

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
Assessment by project and assignments
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 stock movement, 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 simulation 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
Three hours per week for one semester
Assessment by assignments, projects and test
A subject in the master of engineering CIM course.
Elements of CAD systems: hardware, raster systems, refresh screens, plotters, terminals.
Classification and coding: application to design standardisation.

References
A list of references will be supplied by the lecturer.

MP914 CIM Systems Design and Analysis
Three hours 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, energy expenditure, handling and communication. Implication of introduction of CIM techniques on information processing capacity of an organisation. The choice of management functions and programs, employment forecasting and training 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.
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.

Functions, differentiation, integration methods, applications of differentiation and integration, infinite series, complex numbers, hyperbolic functions, differential equations, analytical geometry, functions of more than one variable, linear algebra. Numerical methods. Sample statistics.

References
Thomas, G. and Finney, R. Calculus and Analytic Geometry, Mass., Addison-Wesley, 6th edn, 1984

SM298  Engineering Mathematics  
Three hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in mechanical engineering.

Statistics — descriptive methods, probability, probability distributions for discrete and continuous variables, distributions of compound variates, confidence limits for the mean, tests of hypothesis, F-tests, F and X² distributions, correlation, regression. Laplace transforms — revision of differential equations, transforms and their inverses, solutions for differential equations, applications.

Integration-integration methods, plane polar co-ordinates, double integrals and applications, cylindrical and spherical co-ordinates, triple integrals and applications.

Vector calculus — scalar and vector fields, gradient of a scalar field, potential, surface integrals, flux of a vector field, Gauss divergence theorem, continuity of fluid flow, line integrals, curl, Stokes theorem, introduction to fluid flow.

Linear algebra — orthogonal matrices, eigenvalues, real symmetric matrices and applications.

Textbook

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 of integrated instruction and practice for two semesters

A second-year subject in the degree course in electrical engineering.


Reference

SM296  Engineering Mathematics  
Four hours per week of integrated instruction and practice for two semesters

A second-year subject in the degree course in manufacturing engineering.


References
Spiegel, M.R. Advanced Mathematics for Engineers and Scientists. N.Y., McGraw-Hill (Schaum), 1968

SM392  Engineering Mathematics  
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in electrical engineering.

Introduction to finite difference methods for initial and boundary value problems in ordinary and partial differential equations. Large matrix problems. Linear programming and transportation.

References
Friedberg, G. Linear Programming. Reading, Mass., Addison-Wesley, 1972

SM394  Engineering Mathematics  
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in electrical engineering.

Linear systems. Fourier transforms. Special functions. Curvilinear co-ordinates.

Reference

SM396  Engineering Mathematics  
Four hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in manufacturing engineering.


References

SM398  Engineering Mathematics  
Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in mechanical engineering.

Fourier series and partial differential equations. Introduction to finite difference methods. Further statistics including the analysis of variance and non-parametric methods.
SM492  Engineering Mathematics
Three hours per week for one semester

A subject in 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 modelling, extreme value theory.

References
Saaty, T.L. Elements of Queueing Theory with Applications. N.Y., McGraw-Hill, 1961

SM494  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester

A four-year subject in both streams of the degree course in electrical engineering.

Functions of a complex variable, conformal mapping, Inversion of Laplace transforms Statistical decision theory.

References

SM496  Engineering Mathematics
Two hours per week of integrated instruction and practice for one semester

A four-year subject in the degree course in manufacturing engineering.


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.

Dynamics: Newton’s equations, orbits, motion in resistive media, collision theory, angular and linear momentum, energy Lagrange equations of motion. Particle and rigid body mechanics.

References

SM631  Mathematics
Four hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Complex numbers with applications to circuit theory. Periodic functions and an introduction to Fourier series. Calculus; functions, differentiation and integration methods, applications to circuit theory. Statistics and probability; descriptive statistics, probability theory, distributions, queueing theory.

References
Shenk, A. Calculus and Analytic Geometry. 2nd edn, California, Goodyear, 1979
Thomas, G. and Finney, R. Calculus and Analytic Geometry. 5th edn, Reading, Mass, Addison-Wesley, 1979

SM905  Advanced Mathematical Methods
Two hours per week for two semesters

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
Prenter, P.M. Splines and Variational Methods. N.Y., Wiley, 1975

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 effluents from a chemical viewpoint. Simple 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 second semester

Assessment by semester 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 fourteen experiments on dynamics, wave motion, electricity and magnetism, physical optics and atomic physics.

**Textbooks**

**SP294 Engineering Physics**

Two hours per week for two semesters
Assessment by examination

A second-year subject in the degree course in electrical and electronic engineering.

Quantum physics and quantum optics. Wave-particle duality. Schrödinger's equation and probability; uncertainty principle. Applications to tunnel effect; laser and maser action; laser communication; holography.


Electromagnetic waves: Maxwell's equations; propagation; application to communication systems; fibre optics; thin films; special relativity; Michelson-Morley experiments; application to communication and energy conversion.

Nuclear physics: nuclear structure, properties, stability, decay, and reactions. Instruments and accelerating machines used in nuclear physics. Thermonuclear energy from fission and fusion.
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Amendment to enrolments ................................. CT3
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Swinburne College of TAFE

Director
B.J. MacDonald, BEc(Mon), DipEd(Rusd)
Assistant Director
R.C. Chamberlain, DipMechEng, CertEng(Aero), TTTC
Head, Building Division
G.A. Martin, BA(SIT), BED(LaT), MAIIB
Head, Building Construction Department
E.A. Trotter, CertBuild, TTTC
Head, Plumbing and Mechanical Services Department (Acting)
L.J. Walker, DipTT, CertTech, TechCert, AssAirAH
Head, Business Division
P.C. Quail, BEc, DipEd(Mon)
Head, Business Studies Department
R.W. Conn, BBus, DipEd, AASA
Head, Engineering Division
R.C. Chamberlain, DipMechEng, CertEng(Aero), TTTC
Head, Electrical and Electronics Technology Department
F.A. Gaunt, SEC A Grade Licence, DipTT, TechCert(Electronics)
Head, Mechanical and Manufacturing Technology Department
D. Cusworth, DipMechEng, TTTC
Head, General Studies Division
G.A. Harrison, BSc(Melb), DipMechEng(CIT), TTTC(Haw)
Head, Humanities Department
D. Bennett, BA, BEd, MACE
Head, Mathematics and Science Department
R. Gullan, BSc(Hons), MEd, MACE

Membership of Board of Studies

As at August 1985
Ex officio
Chairman
Dr W.R. Longworth (Principal Director)
Director
Mr B.J. MacDonald
Assistant Director
Mr R.C. Chamberlain
Heads of Division
Mr R.C. Chamberlain — Engineering
Mr G.A. Harrison — General Studies
Mr G.A. Martin — Building
Mr P.C. Quail — Business Studies
Heads of Teaching Departments
Ms D. Bennett — Humanities
Mr R.W. Conn — Business Studies
Mr D. Cusworth — Mechanical and Manufacturing Technology
Mr F.A. Gaunt — Electrical and Electronics Technology
Mr R. Gullan — Mathematics and Science
Mr E.A. Trotter — Building Construction
Mr L.J. Walker (Acting) — Plumbing and Mechanical Services
Swinburne Librarian
Mr W.C. Linklater
Representatives, Swinburne Council
Ms M.S. Fallon
Mr G.W. Fary

Academic Board representatives
Mr I.B. Chapman
Dr M. Harney
Head, Education Unit
Mr B. Hawkins
Co-ordinator, Student Health and Welfare Unit
Miss M. Algar
Education Services Co-ordinator
Vacant
President, Student Union
Mr K.J. Smith
Elected members
Staff representatives
Mr R.M. Carmichael
Mr D.H. Kottek
Mr W. Ponton
Mr K. Wiltshire
Student representatives
Vacant

Application procedure

Entrance requirements

Apprenticeship courses
To be eligible to enter an apprenticeship in any of the trades for which a course is offered at Swinburne, a candidate should be at least fifteen years old and after having selected a trade, should:
1. Apply to the Industrial Training Commission, Nauru House, 80 Collins Street, Melbourne, 3000, for a certificate of qualification to enter into an apprenticeship.
2. Obtain work with an appropriate employer.
3. Serve a probationary period at the trade, then sign an indenture of apprenticeship.

Certificate courses
See under the entry in the appropriate Division.

Tertiary Orientation Program
See under General Studies Division.

Mature-age entry

Special provision is made for mature-age entry. The scheme is designed for applicants who have not satisfied the standard entry requirements but who are able to show that they can cope with their proposed course of study. Applicants in this category are generally people in, or beyond their early twenties who have some years of work experience in a relevant field.

Closing dates for applications

Full-time study
For consideration in the first round of offers:
TOP 1 November 1985
All other courses
10 December 1985
(Further applications received after these dates will be considered if places are available)

Part-time study
Application should be made in person between 9.00am and 8.00pm on 12 and 13 December 1985 or 4 and 5 February 1986.
Student Administration Office

The Student Administration Office, previously referred to as the Student Records Office, provides information for students on admissions, enrolment and examinations regulations and procedures. Other functions include 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:
  - Monday to Friday: 8.00am-8.00pm
  - Monday to Thursday: 8.00am-5.00pm
- During non-teaching weeks:
  - Monday to Friday: 8.45am-5.00pm

Note:

The Office is closed during Public Holidays.

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 responsible for the particular course.
- Amendment to enrolment means the addition, deletion or changing of subject enrolments in a student's course of study.
- Abandonment means the discontinuation of enrolment without formal notification.

Conditions of enrolment

Enrolment at Swinburne College of TAFE is conditional upon:

- the information which is supplied by the applicant upon which an offer of a place in a course is based, being accurate;
- the approval of the head of the awarding division (or his nominee) of the subjects concerned;
- the completion of the requisite enrolment and statistical information forms required by the College;
- the undertaking of the student to abide by the regulations, procedures and standards of conduct of Swinburne College of TAFE and to grant to the Registrar the power to provide appropriate authorities who have permitted a particular student to enrol at the College, details of that person's academic progress as may be required as a condition of approval by that department or authority;
- the payment of any prescribed tuition fee (unless exempt);
- the payment of the prescribed general service fee.

Note:

Enrolment is not completed until the fee is paid.

Students whose fees are to be paid by an employer or other body must bring written evidence at the time of enrolment so that the College may send to the body an invoice for fees.

Amendment to enrolment details

Change of subjects

If any of the subjects, after the initial enrolment, have been dropped, or any new subjects added, the student must complete an Amendment to Enrolment form (available from Student Administration and departments) which must be presented to the head of department for approval then lodged at the Student Administration Office, within seven days.

Students must notify the Student Administration Office of any withdrawal and/or additions of subjects:

(a) by Friday 11 April 1986 for subjects with a mid-year final examination/result, and
(b) by Friday 5 September 1986 for subjects with an end of year final examination/result.

Failure to notify will affect the student's examinations and results in those subjects.

Note:

If a class has been cancelled by the department due to insufficient enrolments after a student's official enrolment, students are still required to lodge an Amendment to Enrolment form.

Cancellation of enrolment

If a student discontinues enrolment at any time, an Amendment to Enrolment form must be completed and submitted to the Student Administration Office after approval from the head of the department. Students are strongly urged to discuss a proposed withdrawal from studies with the head of the department or contact teacher before taking any action.

Refund of fees as a result of cancellation

Application for refund of fees is provided for on the same form, and is valid until 31 March 1986. Applications received after this date will be considered in exceptional circumstances only. A College service fee may be deducted from the refund.

Enrolling in an additional course

Students who enrol for a course and then later decide to do extra subjects in a different course should only complete an Amendment to Enrolment form to add those subjects. A new enrolment form is not required and additional fees are not required to be paid except in circumstances where enrolment changes from part-time to full-time status, and where a student continues to study in Semester 2 and has only paid fees for Semester 1.

Enrolling in a different course

In this case students are also required to fill in an Amendment to Enrolment form to change their course and subjects information. A new enrolment form is not required and additional fees are not required to be paid except in circumstances as outlined in the previous paragraph.

Residential address for correspondence

Throughout the year information regarding courses, examination results and other special notices are sent to students. Students must provide a correct address so that they may be contacted at a moment's notice, otherwise they may jeopardise their chances of meeting deadlines and observing other special requirements.

If a student changes a name, an address, or employer, an Amendment to Personal Details form must be completed and lodged immediately at the Student Administration Office.

Exemptions

Students seeking exemptions from subjects should complete an Application for Exemption form obtainable from Student Administration or from the department controlling the subject. The purpose of granting exemptions is to establish the equivalence of alternative studies. If there is doubt as to whether an exemption should be recommended, the matter should be referred to the appropriate head of the subject area.
Provision of additional information
If the alternative subject is not part of a widely recognised course the provision of results will not be sufficient. Applicants should also provide details of:
— syllabus content,
— length of course,
— assessment procedures.

Sighting of original documents
Original documents should be submitted in person so that they may be photocopied by an officer of the College and returned immediately.

Identity cards
When on campus, all enrolled students are required to carry, and to produce on request of a member of staff, the photographic identity card issued to them.
The card, which has a maximum life of four years, must be presented for update/validation for the forthcoming year on re-enrolment.
The card includes the authorisation for borrowing from the Swinburne Library.
A student who loses an identity card should notify the library as soon as the loss is detected. Cardholders are, under library rules, responsible for any transaction made on the card up to the time of notification of the loss. A replacement card will be issued for a fee of $5.00.
No refund of the general service fee will be made unless the identity card is returned to Student Administration with the notice of withdrawal from a course.

Fare concessions
Metropolitan Transit Authority, country and interstate rail and airline fare concession application forms are available from the Student Administration Office. Only full-time students are eligible for fare concessions.

General Service Fee
All enrolling students are required to pay a general service fee. At the time of printing, fees for 1985 had not been determined.
As a guide those for 1985 were:
Full-time students more than one semester academic $88.00
Full-time students at least one semester work experience $50.00
Part-time students $30.50
For all College purposes, 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.

Examinations
General
1. Time-tables
   Approximately half-way through each semester, a provisional examination time-table is displayed on notice boards around the College. Students should note their examination times and immediately report any clashes to the Examinations Officer who is located in the Student Administration Office.
The final time-table, without room allocations, is posted approximately one month later. Room allocations are posted at least one week before classes end.
The final time-table is printed and copies are available to students. They are distributed from several points, including the Student Administration Office.

2. Identity cards
   Students must take their identity cards into the examination room.

3. Absence from examinations
   The Assessment Regulations (Section 6) make specific reference to absence from examinations due to genuine inability to attend. Misreading the examination time-table is not regarded as “inability to attend”.

4. Publication of results
   Examination results will not be given over the telephone. Results are displayed on the notice board in the quadrangle on the date or dates announced by the Registrar.

Internal examinations
Swinburne College of TAFE
Examination and Assessment Regulations

1. Scope
   1.1 The following rules apply to all courses and subjects taught and examined by the Swinburne College of TAFE, except where external examinations may require otherwise.

2. Definitions
   2.1 An examination is a formal assessment undertaken during the period proclaimed for examinations by the Board of Studies and which is subject to the control of the Registrar through his designated officer.
   2.2 A test is an assessment scheduled at any time during the course of a subject by the subject panel.
   2.3 An assignment may cover the following: — laboratory work, field work, projects, class problems, essays, folios, design reports and general reports.
   2.4 A final result is a formal notation of achievement derived from one or more of the above definitions.
   2.5 The Chief Examiner is the Principal Director of Swinburne College of TAFE. Responsibilities of the Chief Examiner are, for the time being, delegated to the Director, Swinburne College of TAFE.
   2.6 An awarding division board is the Division Board responsible for making recommendations to the Swinburne Council for the grant of a particular award.

3. Subject panels
   3.1 The head of department shall appoint a subject panel for the necessary subject areas comprising at least two members of the teaching staff of SCT, one of whom shall be appointed the convener. The head of department shall notify the appropriate division board of the panel’s composition no later than the April meeting.
   3.2 The panel shall, when required, draft the appropriate material and submit same through its convener to a moderator appointed by the head of department.
   3.3 A moderator shall be responsible for final submissions to the head of department.
   3.4 The convener of each panel shall be responsible for:
      3.4.1 In the case of examinations and tests, the allocation of questions, the final balance of the paper and the distribution of scripts for marking;
4. Conduct of examinations

4.1 General
Unless otherwise stated on the time-table, morning examinations will commence at 9.00am and afternoon examinations at 1.30pm. 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 30 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 Swinburne 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.

4.2 Special provisions for disabled students
Special examination arrangements may be made for students with temporary or permanent disabilities. Applications for special arrangements are to be made to the head of departments who will recommend appropriate arrangements to the Chief Examiner for approval. The Chief Examiner will notify approved arrangements to the Examinations Officer who will be responsible for their implementation.

4.3 Collection and despatch of papers
The Examinations Officer is solely responsible for redirecting all completed examination scripts to the appropriate marking authority. Internally marked examination scripts will be available at the Examination Centre when all relevant documents have been cleared but, in any case, not before the afternoon of the day following the examinations.

4.4 Examination discipline
4.4.1 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 head of the teaching department.

4.4.2 At the conclusion of the examination the Chief Examiner shall convene a meeting of the subject convener, the student concerned and the head of the teaching department to determine:
(a) whether there has been a breach of examination discipline;
(b) whether there is a need for assistance with communication with the student; if it resolves that there is such a requirement it shall adjourn the meeting and arrange for the presence of appropriate professional services when the teaching is reconvened;
(c) if it resolves that there has been a breach of examination discipline, the penalty to be imposed upon the student.

4.4.3 The maximum penalty for cheating or other examination irregularity is that the student be permanently excluded from further study at the College of TAFE and if any penalty is imposed the student shall be notified in writing.

4.4.4 The student shall have the right of appeal as to the finding of a breach of examination discipline and/or the penalty imposed. Such appeal shall be determined by a committee appointed for the purpose by the Principal Director.

The Appeal 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 College nominated by the President of the Student Union;
(c) one shall be the nominee of the subject convener;
(d) two shall be members of the academic teaching staff of the College nominated by the head of the teaching division; provided that no member of the Appeal Committee shall have been a party to the original investigation.

5. Processing results

5.1 The convener shall within 14 days of the completion of the examination period, submit to the head of the teaching department the following:
(a) certification that these regulations have been followed;
(b) a 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.

The results under 5.1.1 above shall be transmitted by the head of the teaching department to Student Administration.

5.1.3 Before recommending the results to the awarding division board or its committee established for the purpose, 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.

5.1.4 After the awarding division board (or the Board Committee established for the purpose) has approved the results the chairman shall advise Student Administration of the final result category for each student.
5.1.5 Student Administration shall arrange for the publication of the results in a public place as soon as practicable after the determination by the division board or its committee and for the posting to each student a certificate showing his/her results for the semester concerned.

5.2 Result categories

5.2.1 Unless indicated below, results for subjects which are internally assessed shall use the following gradings:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 — 100%</td>
<td>Credit CR</td>
</tr>
<tr>
<td>50 — 74%</td>
<td>Pass P</td>
</tr>
<tr>
<td>0 — 49%</td>
<td>Fail N</td>
</tr>
</tbody>
</table>

5.2.2 Subjects undertaken as part of a Tertiary Orientation Program will be recorded and reported using the following grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass with 80% — 100%</td>
<td>A</td>
</tr>
<tr>
<td>various 70% — 79%</td>
<td>B</td>
</tr>
<tr>
<td>grades of 60% — 69%</td>
<td>C</td>
</tr>
<tr>
<td>distinction 50% — 59%</td>
<td>D</td>
</tr>
<tr>
<td>40% — 49%</td>
<td>E</td>
</tr>
<tr>
<td>5% — 39%</td>
<td>F</td>
</tr>
<tr>
<td>0% — 4%</td>
<td>J</td>
</tr>
</tbody>
</table>

and, where VISE reports in two categories only:

Satisfactory S
Unsatisfactory U

5.2.3 Subjects undertaken as part of a VISE accredited Year 12 certificate (Higher School Certificate) will use the following grades where VISE report by grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% — 100%</td>
<td>A</td>
</tr>
<tr>
<td>70% — 79%</td>
<td>B</td>
</tr>
<tr>
<td>60% — 69%</td>
<td>C</td>
</tr>
<tr>
<td>50% — 59%</td>
<td>D</td>
</tr>
<tr>
<td>40% — 49%</td>
<td>E</td>
</tr>
<tr>
<td>5% — 39%</td>
<td>F</td>
</tr>
<tr>
<td>0% — 4%</td>
<td>J</td>
</tr>
</tbody>
</table>

5.2.4 Apprenticeship module results are recorded as:

Credit CR
Pass P
Not Completed NC

5.2.5 The following notations are applicable in special circumstances:

Deferred Result DEF
Not Completed — Continuing NC
Ceased — no withdrawal CNW

Special circumstances in connexion with the NC category must be approved by the Board of Studies.

6. Absence from examinations

Students who are absent from an examination due to illness or other reason may apply through the Student Administration Office for a special examination. Such application must be accompanied by evidence of a genuine inability to attend the examination and must be lodged within forty-eight (48) hours of the examination, weekends and public holidays excluded.

7. Deferred results

7.1 A deferred result may be granted only by the head of a teaching department. The special circumstances justifying the grant of a deferment must be set out in writing to the chairman of the awarding division board.

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

7.3 The deferred result shall be recorded as “DEF” in the result listings for the subject.

7.4 Any extension of the period of deferment must have the prior approval of the head of the awarding division 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 division board.

7.5 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 head of division for onward transmission to the division board.

7.6 Student Administration shall notify the head of the awarding division of any deferred result which has not been finalised within three months of the date of publication of the deferment. The division board must deal with the matter at its next meeting.

8. Students discontinuing

Any student who is enrolled in a subject on the date on which final candidates lists are produced and who is known to the teaching staff to have discontinued the subject may be recorded as having ceased the subject. The result grade used in such a case shall be CNW — Ceased, no withdrawal.

9. Retention of examination scripts

All examination scripts, papers and records of raw assessments must be retained by the department for a period of six months.

10. Reports

On payment of the appropriate fee within thirty (30) days of publication of the results, a candidate is entitled to a full report on his final written examination paper. This does not apply to practical examinations.

Fees
Fees for such reports shall be determined from time to time by the Principal Director.

Enquiries regarding marks or access to scripts should be made directly to the appropriate department or division office.

11. Alteration of original result

Any amendment to internally assessed results will be accepted upon presentation of a Result Amendment form duly signed by the subject teacher, the head of department, and authorised by the head of the teaching division.

The head of division can authorise amendments to results for medical reasons only. Details of the extension granted and the reasons for it shall be notified to the next meeting of the division board. Any amendments proposed after two (2) months must be submitted to the divisional board responsible for the teaching department involved for approval.

External examinations

Special examinations

A Candidates who are absent from an external examination for medical reasons cannot be permitted to present for the examination at a later date. They can, however, be permitted to present for a special examination.

B In any case of absence by a candidate from a first semester, second semester or annual external examination owing to illness or reasons considered satisfactory by the Director, Swinburne College of TAFE, the candidate may be granted a special examination.
These special provisions do not apply to electrical wiring, plumbing or any trade practical examinations.

A candidate who misses an examination through misreading the time-table is not eligible for a special examination.

An application for a special examination must be made to the College within seven days of the date of the examination, and if the absence is the result of illness a covering medical certificate must be submitted.

(i) Where a supplementary examination is available for the subject, the Director, Swinburne College of TAFE may grant permission for the candidate to sit for a special examination which will be the supplementary examination in that subject.

(ii) Where no supplementary examination is available the candidate may be granted permission to sit for a special examination in the following circumstances:

— in the case of absence from an annual examination, the candidate must have obtained at least forty per cent at the mid-year examination or equivalent where cumulative assessment has been used.

— in the case of absence from semester examinations, the candidate must have obtained at least forty per cent of the marks allocated for internal assessment.

C A candidate who sits for an external examination but who considers that he/she should be accorded special consideration, may, on the recommendation of the Director, Swinburne College of TAFE, be permitted to sit for either:

(i) the supplementary examination, or

(ii) a special examination, where no supplementary examination is held.

These special provisions do not apply to electrical wiring, plumbing or any trade practical examinations.

An application for a special examination must be made to Student Administration within 48 hours of the date of the examinations, and if the request is being made on medical grounds, a report from a qualified medical practitioner must be submitted.

Recorrections

1 Any candidate at an external examination other than a practical examination may, on payment of a fee of $11.50, have the examination paper in that subject recorrected.

2 Any application for a recorrection must be lodged, together with the prescribed fee, at the office of the Education Department not later than thirty days after the publication of examination results for the subject.

3 Applications should be in writing and addressed to the Cashier, Education Department, 2 Treasury Place, Melbourne, 3002, not to the Examinations Branch.

4 The result of the recorrection will be provided as soon as possible, though not necessarily before the supplementary examination for subjects in which December supplementary examinations are held.

5 Where a candidate's eligibility to sit for a supplementary examination depends on the result of a recorrection, and where the recorrection result is not available before the time set for the examination, the candidate should be allowed to sit for the examination, and an appropriate endorsement of the fact should be made on the front of the answer papers.

6 A candidate who is not granted a pass on a recorrection of an examination paper will be furnished with a report on that examination paper.

7 The fee mentioned in paragraph (1) will be refunded if:

(a) the candidate, as a result of the recorrection, is granted a pass in the subject, or

(b) the Deputy Chairman, TAFE Board considers that special circumstances warrant the refunding of the fee.

Awards

Students eligible to receive certificates are required to apply on the form prescribed, available from Student Administration. Applications close on 31 October each year and for applicants who anticipate completing the academic work in the following December exams, the conferring ceremony will be held in the following year.

Any request for exemption(s) must be approved in writing by the College before an application for a certificate can be made, in order to prevent delays in granting of the certificate.

Original evidence of same subject(s) completed elsewhere must be supplied with applications together with an additional photocopy which will be retained by Student Administration. For more information refer to section on exemptions.

Swinburne College of TAFE Computer Service

Unit Manager:  Mr J.E. Browne, MSc, DipEd

Technician:  Mr M. King

The Swinburne College of TAFE Computer Service provides modern computing facilities for teaching computer related subjects and offers some computer aided instructional facilities. It offers hardware and software support to all users.

The Computer Unit is located in rooms N7, N8 and N9 and is equipped with 50 IBM micro-computers. A substantial software library is maintained, including multiple copies of various languages and current packages in the IBM "Apprentice" series. Communications facilities are also available.

Loans and assistance schemes

With the approval of the Loan Fund Committee, long-term and short-term financial assistance may be obtained from the following loan funds:

- Student Aid Fund
- Student Union Aid Fund
- Rotary Swinburne Bursary

Enquiries should be made to the Student Counselling Service, telephone 819 8025.

Education allowance

Certain categories of full-time students may be eligible for an Education Department Education Allowance. Enquiries about this allowance should be made at the Student Administration Office.

Living allowances

Information regarding the following living allowance schemes is available from the Student Counselling Service. Application forms are also available.

Tertiary Education Assistance Scheme (TEAS)

The Commonwealth Government provides financial assistance for full-time study. This includes courses at technician, certificate, diploma, degree and postgraduate diploma level. To be eligible, students must also meet certain requirements regarding previous study, other awards held, etc.

As from 1 January 1986 the following benefits are available subject to a means test:

- Maximum living allowance for dependent students at home: $2,477 p.a.
- Maximum living allowance for independent students: $3,821 p.a.
- Maximum allowance for dependent spouse: $2,220 p.a.
- Incidental allowance: $30 p.a.
- Student Counselling Service or the Commonwealth Department of Education, 17 Yarra Street, Hawthorn 3122.
Adult Secondary Education Assistance Scheme (ASEAS)
This Commonwealth scheme provides assistance to students aged nineteen years or over at 1 January 1986 in the Tertiary Orientation Program, who have not completed Year 12 in the past three years, subject to a means test and certain conditions of eligibility. This scheme also extends to approved Year 11 programs. Benefits are similar to the TEAS scheme.
Further details and application forms are available from the Student Counselling Service.

Secondary Allowance Scheme (SAS)
This scheme provides assistance to TOP students under nineteen, or their families, with a limited income. An allowance of up to $1,825 p.a. is paid, subject to a means test. This scheme also extends to approved Year 11 programs.
Details may be obtained from the Student Counselling Service.

Assistance for isolated children
Students likely to qualify for this assistance are those who do not have reasonable daily access to an appropriate government school. This includes Tertiary Orientation Program students who must live away from home when the family moves away during a school year, those who must live away from home to undertake a remedial or other special type of course, those who live in a geographically isolated area and those who are disabled.
Benefits include a boarding allowance, a second home allowance and a correspondence allowance.
Details may be obtained from the Student Counselling Service.

Aboriginal Grants Schemes
These schemes provide assistance to secondary and post-secondary students of Aboriginal or Torres Strait Island descent.
Details are available from the Student Counselling Service or the Commonwealth Department of Education, 17 Yarra Street, Hawthorn 3122.

Scholarships and awards
The following are scholarships and awards for which Swinburne College of TAFE students may be eligible. Details may be obtained from the Registrar's Office.

Alexander Rushall Memorial Scholarships
These are available to Protestant male students enrolled in the Tertiary Orientation Program in the Swinburne College of TAFE. There is a means test. Value: $40 to $200 and is tenable for one year. Applications close in December.

Australian Railways Union — W.H. O’Brien Memorial Scholarship
(For disabled students or students from sole-parent families) This scholarship will be awarded after consideration of the results of the candidate’s year’s work and school reports. The scholarship is available for any level of study but candidates must have been in continuous attendance at a Victorian school in 1985, and must be dependent children of financial members of the Australian Railways Union. The scholarship is tenable for four years and carries an allowance of $200 p.a. Applications close 13 December 1985.

Masonic Scholarships
— Freemasons’ Further Education Awards
These scholarships will be awarded to applicants who have successfully completed the Tertiary Orientation Program and are eligible for entry to an approved full-time middle-level course at an approved technical college. The award is tenable for two years with an annual value of $500. Applications close at the end of November.

Parents Without Partners Scholarships
These scholarships are available to children of lone-parent families whose parent is a member of Parents Without Partners. Eligible candidates should be in attendance at Year 7 to Year 12 level. Scholarships are awarded after consideration of the candidate’s year’s work and financial need. Value: $50 to $200. Applications close on 30 September.

Soldiers’ Children Education Scheme
Benefits and allowances are available only to eligible children of deceased and incapacitated veterans. The scheme ranges from secondary to tertiary courses. Value: from $41 – $57 per fortnight for secondary students and from $78 – $137 per fortnight for tertiary students.

Telecom Credit Union Scholarships
These scholarships are available only to children of Telecom Credit Union members. Candidates must be studying at Year 7 to Year 12 level and awards are made on the basis of scholastic achievement and need. Value: $500. Applications close in December.

Victorian Overseas Foundation Scholarships
These scholarships are awarded each year for outstanding tradespersons between twenty-one and twenty-five years of age who have completed their apprenticeship indentures and a prescribed course at a technical college. Scholarship winners go overseas for a period of up to two years for training, work and study. Applications close on 31 May of each year.

Wainwright A.N.A. Scholarship
This scholarship will be awarded in 1986 after consideration of the candidate’s year’s work in a tertiary orientation year of study and is tenable for the full length of any approved technical course. Value: $50 p.a. Applications close in December.
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  - Carpentry, Joinery ........................................................................... CT13
  - Carpentry and Joinery ................................................................. CT13
- Technician certificates
  - Building Construction Certificate ........................................... CT13
  - Building Foreman ...................................................................... CT14
  - Building Inspector .................................................................... CT14
  - Clerk of Works ........................................................................... CT14
- Certificates of Technology
  - Building Surveyor Certificate ................................................ CT15
  - Building Construction ............................................................. CT15
  - Building Supervisor ................................................................. CT15
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Building Division

Building Construction Department

Head
G.A. Martin, BA, BEd, MAIB

Academic staff
A. Boltman, GradIEAust, DipEd, MIEAust
A.R. Cottle, DipBldg, DipEd, BuildForemanCert, CofWCert, BuildSurvCert, BuildInsptCert, MAIC, FAIBS
R.L. D’Argaville, TTrIC
S. Day, TTrIC
D.R. Bendle. TTrIC
M.J. Finnerty, DipTT, CofWCert, MBPDS
T. Harris, TTrIC
S. Mitchell, DipTT, TechCert
V.N. Osterlund, TTrIC, TechCert
A.L. Patience, DipTTg, BEd, MEDStuds, MAIC, MAIB, M1AA
Z.P. Szirorn, DipBldg, TTrIC
R.P. Ulbrick, TTrIC, DipTT, TechCertInspt, CofWForeman
C.W. Watson, ACCT

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M. Dempsey, DipTT
J.F.T. Gooding, DipTT, CertTech, TechCert
G.A. Grendon, DipTT
L.A. Griffin, DipTT
D. Healey, DipTT, MlPA
R.C. Hill, TechCert, AssAIRAH, DipTT
N.J. McBride, DipTT
B.J. Morrison, TTrIC
K. Oldham, DipTT, CertServInst&Des, MlPA
K. Stockdale
J.B. Tobin, DipTT, TechCert
G.J. Williams, DipTT, AssAIRAH, GradDipEdAdmin
R. Wilson, COTT

Building Construction courses
The following courses are offered by the Building Construction Department.

Apprenticeship courses

The department is responsible for the carpentry and joinery course, which is an apprenticeship course of three years' duration designed to meet the requirements prescribed in the Apprenticeship Carpentry, Joinery trades regulations of the Industrial Training Commission.

B32CBA Apprenticeships, Carpentry, Joinery or Carpentry and Joinery

Technician Certificate — Building courses

The building technician certificate is accepted as evidence that certificate holders have received training which should enable them to accept positions of responsibility in the industry. It is possible to complete the course by evening and/or part-time attendance at the College. Apprentices may take a technician course concurrently with normal apprenticeship training, but attendance at evening classes is necessary.

The following courses are available:

B34CAF Building Construction Certificate
B34CAB Building Foreman
B34CAD Building Inspector
B34CAC Clerk of Works

Certificate of Technology — Building courses

To train, for a variety of special areas of responsibility in the building industry; immediate support personnel to management and the professions.

The following courses are available:

B21CAB Building Construction
B21CAS Building Surveyor
B21CAH Estimating
B21CAG Fire Technology
B21CAL Certificate of Advanced Building Construction

Certificate of Technology — Building Surveyor

The Certificate of Technology — Building (Building Surveyor) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Surveyors Certificate.

Special courses

B42CAK Scaffolding Inspection
B42CBQ Timber Framing Code
Apprenticeship courses

B32CBA Apprenticeships, Carpentry, Joinery or Carpentry and Joinery

Eight hours per week for three years to complete a minimum total of twenty-four modules

Apprentices are required to attend classes for one day each week for three years. Optional evening classes are held for second and third year students.

Course structure

<table>
<thead>
<tr>
<th>Code</th>
<th>Mod.</th>
<th>Subject</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB051</td>
<td>Mod. 1</td>
<td>Simple base structures, basic tool skills</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB052</td>
<td>Mod. 2</td>
<td>Simple timber wall framing</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB053</td>
<td>Mod. 3</td>
<td>Simple timber roofing — skillion and gable roof framing</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB054</td>
<td>Mod. 4</td>
<td>Simple doors — lidded and braced — fly wire</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB055</td>
<td>Mod. 5</td>
<td>Simple windows — casement frame and sash</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB056</td>
<td>Mod. 6</td>
<td>Timber, fencing and gates</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB057</td>
<td>Mod. 7</td>
<td>Timber villa construction — sub-floor structure to include set of wall plates</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB058</td>
<td>Mod. 8</td>
<td>Timber villa construction — wall framing</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB059</td>
<td>Mod. 9</td>
<td>Timber villa construction — ceiling and gable roof framing</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB060</td>
<td>Mod. 10</td>
<td>Timber villa construction — simple hip roof framing</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB061</td>
<td>Mod. 11</td>
<td>Door and door frames (domestic)</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB062</td>
<td>Mod. 12</td>
<td>Window joinery — double hung sash with patented balances rectangular louvre</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB063</td>
<td>Mod. 13</td>
<td>Window joinery — double hung sashes in box frame</td>
<td>Semester 1</td>
</tr>
<tr>
<td>TB064</td>
<td>Mod. 14</td>
<td>Simple stairs — timber and concrete</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB065</td>
<td>Mod. 15</td>
<td>Brick veneer construction and hand saw sharpening</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB066</td>
<td>Mod. 16</td>
<td>Hip and valley roofing</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB067</td>
<td>Mod. 17</td>
<td>Concrete formwork</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB068</td>
<td>Mod. 18</td>
<td>Hip and valley roofing 1 (equal pitch)</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB069</td>
<td>Mod. 19</td>
<td>Internal fixing</td>
<td>Semester 2</td>
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<tr>
<td>TB070</td>
<td>Mod. 20</td>
<td>Hip and valley roofing 2 (unequal pitch)</td>
<td>Semester 2</td>
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<td>TB071</td>
<td>Mod. 21</td>
<td>Shoring, centres and levelling</td>
<td>Semester 2</td>
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<td>TB072</td>
<td>Mod. 22</td>
<td>Formwork for concrete and systems</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB073</td>
<td>Mod. 23</td>
<td>Industrial roofing, trusses and ceilings</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB074</td>
<td>Mod. 24</td>
<td>Site works, setting out and levelling</td>
<td>Semester 2</td>
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<tr>
<td>TB075</td>
<td>Mod. 25</td>
<td>Large centres, shoring and trenches</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB076</td>
<td>Mod. 26</td>
<td>Joinery 1 (doors, windows and louvres)</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB077</td>
<td>Mod. 27</td>
<td>Joinery 2 (curved work)</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB078</td>
<td>Mod. 28</td>
<td>Stair building 2</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB079</td>
<td>Mod. 29</td>
<td>Stair building 3</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB080</td>
<td>Mod. 30</td>
<td>Stair building 4</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB081</td>
<td>Mod. 31</td>
<td>Stair building 5</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB082</td>
<td>Mod. 32</td>
<td>Stair building 6</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB083</td>
<td>Mod. 33</td>
<td>Stair building 7</td>
<td>Semester 2</td>
</tr>
<tr>
<td>TB084</td>
<td>Mod. 34</td>
<td>Stair building 8</td>
<td>Semester 2</td>
</tr>
</tbody>
</table>

Technician Certificate

B34CAF Building Construction Certificate

This course will be offered from the commencement of the academic year in 1986. The certificate will be offered as part-time day and part-time evening courses.

Entrance requirements

Entry to the certificate course may be by way of:

(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade.
(iv) Mature-age entry.

The single compulsory subject for entry is Year 11 English. If it has not been previously gained, however, it may be studied concurrently.

Issue of award

Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

Course detail

The course consists of core and elective subjects. Core subjects represent a total of 425 hours of study and elective subjects represent a total of 170 hours of study.

Semester 1

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1 (Tutorial sessions incorporating Drafting for Builders)</td>
<td>2</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication Studies 1A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>102 hours each semester</td>
</tr>
</tbody>
</table>

Semester 2

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1 (Tutorial sessions incorporating Drafting for Builders)</td>
<td>2</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication Studies 1B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>102 hours each semester</td>
</tr>
</tbody>
</table>

Semester 3

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB720</td>
<td>Estimating and Cost Control 1</td>
<td>2</td>
</tr>
<tr>
<td>TB705</td>
<td>Site Supervision and Management</td>
<td>2</td>
</tr>
<tr>
<td>TB710</td>
<td>Safety in Construction</td>
<td>2</td>
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<tr>
<td></td>
<td>Total</td>
<td>102 hours each semester</td>
</tr>
</tbody>
</table>

Semester 4

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB703</td>
<td>Regulations and Government Authorities</td>
<td>2</td>
</tr>
<tr>
<td>TB704</td>
<td>Contract Law and Contract Administration</td>
<td>3</td>
</tr>
<tr>
<td>TB707</td>
<td>Business Management for Builders</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>119 hours each semester</td>
</tr>
</tbody>
</table>

Semester 5 and 6

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>TB222</td>
<td>Building Construction 2 (Theory)</td>
<td>2</td>
</tr>
<tr>
<td>TB712</td>
<td>Structural Applications 2</td>
<td>1</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2 (Tutorial sessions incorporating Design/Specification)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>170 hours each semester</td>
</tr>
</tbody>
</table>

The subjects listed above are offered over a two (2) semester period to conform in content with the subjects offered in the Certificate of Advanced Building Construction.
B34CAB Technician Certificate — Building (Building Foreman)

Course detail
The course consists of eleven subjects. All subjects are offered on a part-time evening basis, however most subjects are also conducted during the day.

The Technician Certificate is awarded to any student who completes the following:

All subjects in the Technician Certificate — Building (Building Foreman) plus completion of an approved apprenticeship course, i.e. Carpentry and Joinery, Plumbing and Gasfitting or Bricklaying.

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TH145</td>
<td>Building English</td>
<td>2</td>
</tr>
<tr>
<td>TB322</td>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB316</td>
<td>Building Mathematics (T)</td>
<td>2</td>
</tr>
<tr>
<td>TB220</td>
<td>Building Science 1</td>
<td>2</td>
</tr>
<tr>
<td>TB417</td>
<td>Building Surveying (T) Theory and Maths</td>
<td>5</td>
</tr>
<tr>
<td>TB222</td>
<td>Technical Reports (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB426</td>
<td>Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB440</td>
<td>Buildings Quantities</td>
<td>2</td>
</tr>
</tbody>
</table>

B34CAD Technician Certificate — Building (Building Inspector)

General description and aim of course
The course is designed:
(a) to be a job-oriented extension to the basic vocational courses;
(b) to suit the particular needs and interests of students and employers;
(c) to meet the minimum entrance requirements of the Certificate of Technology — Building.

Entrance requirements
Completion of a Year 10 standard of education, and engaged in an appropriate vocational program.

Career potential
Substantial opportunities exist in municipal building inspection and similar positions may be available with the building departments of various large organisations, e.g. banks, government departments and authorities.

Course detail
The course consists of twelve subjects. All subjects are offered on an evening part-time basis and all subjects are offered during the day.

Prospective students can also apply to complete the first year on a full-time basis.

Completion of course
The Technician Certificate — Building (Building Inspector) course meets the academic requirements of the Building Qualifications Board for the issue of the Municipal Building Inspectors Certificate.

Students who have completed the Technician Certificate — Building (Building Inspector) are eligible to continue studies leading to a Certificate of Technology — Building (Building Surveyor) or other Certificate of Technology — Building courses.

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB222</td>
<td>Technical Reports (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB417</td>
<td>Building Surveying (T) Theory and Maths</td>
<td>5</td>
</tr>
<tr>
<td>TB426</td>
<td>Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB425</td>
<td>Applied Mechanics 1 (for students who are</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>eligible to continue to Certificate of Technology—</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Building (Building Surveyor)</td>
<td></td>
</tr>
<tr>
<td>TB126</td>
<td>Building Mathematics (T)</td>
<td>1</td>
</tr>
</tbody>
</table>

B34CAC Technician Certificate — Building (Clerk of Works)

It is necessary for entrants to the course to be serving, or have served, an apprenticeship (with proficiency) in one of the following approved building trades:

Carpentry
Joinery
Plumbing — Sanitary, General and Gasfitting
Plumbing — Mechanical Services, General and Gasfitting
Bricklaying

or have at least ten years’ relevant experience, approved by the head of the department.

Course structure

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB220</td>
<td>Building Science (T) A and B</td>
<td>2</td>
</tr>
<tr>
<td>TB322</td>
<td>Technical Reports (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB316</td>
<td>Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB417</td>
<td>Building Surveying (T) Theory and Maths</td>
<td>5</td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TB426</td>
<td>Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB436</td>
<td>Practical Inspection (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB435</td>
<td>Scaffolding Inspection A</td>
<td>2</td>
</tr>
<tr>
<td>TB439</td>
<td>Scaffolding Inspection B</td>
<td>2</td>
</tr>
<tr>
<td>TB502</td>
<td>Quantity Surveying 1</td>
<td>2</td>
</tr>
<tr>
<td>TB110</td>
<td>Contracts and Building Law</td>
<td>2</td>
</tr>
<tr>
<td>TB520</td>
<td>Role and Function of a Clerk of Works (one semester)</td>
<td>1</td>
</tr>
</tbody>
</table>
Certificates of Technology

B21CAE Building Surveyor Certificate (1967 syllabus)

This course applies to completing students only and is not available to new students.

Course structure

<table>
<thead>
<tr>
<th>Group A</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>Building Construction 1A 2</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B 2</td>
</tr>
<tr>
<td>TB222</td>
<td>Building Construction 2A 2</td>
</tr>
<tr>
<td>TB233</td>
<td>Building Construction 2B 2</td>
</tr>
<tr>
<td>TB433</td>
<td>Powers and Duties of a Municipal Building Surveyor Part 1 2</td>
</tr>
<tr>
<td>TB426</td>
<td>Building Administration and Supervision 2</td>
</tr>
<tr>
<td>TB429</td>
<td>Building Practice 2</td>
</tr>
<tr>
<td>TB436</td>
<td>Scaffolding Inspection A 1</td>
</tr>
<tr>
<td>TB439</td>
<td>Scaffolding Inspection B 1</td>
</tr>
</tbody>
</table>

Group B

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH145</td>
<td>English 3</td>
</tr>
<tr>
<td>TB431</td>
<td>English Report Writing, Library and Thesis 2</td>
</tr>
<tr>
<td>TB425</td>
<td>Applied Mechanics 1 2</td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A 2</td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construct-or 2B 2</td>
</tr>
<tr>
<td>TB408</td>
<td>Foundations 2</td>
</tr>
<tr>
<td>TB430</td>
<td>Building Science 1A and B (Building Surveyors) 2</td>
</tr>
<tr>
<td>TB434</td>
<td>Powers and Duties of a Municipal Building Surveyor, Part 2 2</td>
</tr>
<tr>
<td>TB427</td>
<td>Building Construction 2C (Structural Analysis) 2</td>
</tr>
<tr>
<td>TB428</td>
<td>Building Construction 3C (Theory of Structure) 2</td>
</tr>
</tbody>
</table>

B21CAC Certificate of Technology — Building (Building Construction)

Course structure

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB100 1A</td>
</tr>
<tr>
<td>TH115 1A</td>
</tr>
<tr>
<td>TH116 1B</td>
</tr>
<tr>
<td>TB417 2A</td>
</tr>
<tr>
<td>TB216 1A</td>
</tr>
<tr>
<td>TB217 1B</td>
</tr>
</tbody>
</table>

Second year

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB101 2B</td>
</tr>
<tr>
<td>TB134 1H</td>
</tr>
<tr>
<td>TB120 1A</td>
</tr>
<tr>
<td>TB198 2A</td>
</tr>
<tr>
<td>TB222 2B</td>
</tr>
<tr>
<td>TB323 2A</td>
</tr>
<tr>
<td>TB220 1B</td>
</tr>
</tbody>
</table>

Third year

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB412 3A</td>
</tr>
<tr>
<td>TB413 3B</td>
</tr>
<tr>
<td>TB426 2B</td>
</tr>
<tr>
<td>TB502 1A</td>
</tr>
</tbody>
</table>

Fourth year

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB200 1C</td>
</tr>
<tr>
<td>TB516</td>
</tr>
</tbody>
</table>

Plus four electives from subjects listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB362</td>
<td>Estimating and Costing 2</td>
</tr>
<tr>
<td>TB559</td>
<td>Quantity Surveying 2 4</td>
</tr>
<tr>
<td>TS101</td>
<td>Accounting 1 (one semester) 3</td>
</tr>
<tr>
<td>TS102</td>
<td>Accounting 3 (one semester) 3</td>
</tr>
</tbody>
</table>

B21CAB Certificate of Technology — Building (Building Supervisor)

Course structure

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 1A</td>
</tr>
<tr>
<td>TB217 1B</td>
</tr>
<tr>
<td>TB322 2A</td>
</tr>
<tr>
<td>TB439 2B</td>
</tr>
<tr>
<td>TB412 3A</td>
</tr>
<tr>
<td>TB413 3B</td>
</tr>
<tr>
<td>TH145 1B</td>
</tr>
<tr>
<td>TH116 1B</td>
</tr>
<tr>
<td>TB516</td>
</tr>
<tr>
<td>TS215 1A</td>
</tr>
<tr>
<td>TS216 1B</td>
</tr>
<tr>
<td>TB501</td>
</tr>
<tr>
<td>TB452</td>
</tr>
<tr>
<td>TB501</td>
</tr>
<tr>
<td>TB110</td>
</tr>
<tr>
<td>TB390</td>
</tr>
</tbody>
</table>

B21CAD Certificate of Technology — Building (Building Surveyor) (1976 syllabus)

Course structure

<table>
<thead>
<tr>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 1A</td>
</tr>
<tr>
<td>TB217 1B</td>
</tr>
<tr>
<td>TB322 2A</td>
</tr>
<tr>
<td>TB323 2B</td>
</tr>
<tr>
<td>TB412 3A</td>
</tr>
<tr>
<td>TB413 3B</td>
</tr>
<tr>
<td>TH115 1A</td>
</tr>
<tr>
<td>TH116 1B</td>
</tr>
<tr>
<td>TB426 1A</td>
</tr>
<tr>
<td>TB601</td>
</tr>
<tr>
<td>TB436</td>
</tr>
<tr>
<td>TB425</td>
</tr>
<tr>
<td>TB437</td>
</tr>
<tr>
<td>TB504</td>
</tr>
<tr>
<td>TB427</td>
</tr>
<tr>
<td>TB428</td>
</tr>
</tbody>
</table>
however, this may be shortened by taking advantage of those subjects offered during daytime hours.

Course structure

The expected duration of the course is six years part-time, which may be taken part-time.

The course consists of twenty-three subjects (thirty units) all of which may be taken part-time.

Entrance requirements

Satisfactory completion of Year 11 or mature-age entry. Special provision is made for applicants who have not satisfied the standard entry requirements but are able to cope with their proposed course of study. Applicants in this category are generally people in, or beyond their early twenties, who have some years of work experience in a relevant field. Preference will be given to mature-age applicants already employed in the fire users' industries.

Course structure

The course consists of subjects to the value of twenty-eight (28) units. It comprises ten compulsory core subjects totalling twenty units plus a minimum four approved elective subjects totalling eight units.

Ten compulsory core subjects = 20 units
Elective subjects = 8 units

28 units

All subjects may be taken part-time; the expected duration of the course is 4 years part-time.

Core subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM129</td>
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</tr>
<tr>
<td>TM229</td>
<td>2</td>
</tr>
<tr>
<td>TH115</td>
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<td>TH116</td>
<td>2</td>
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<td>TB822</td>
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<td>TB823</td>
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<td>TB824</td>
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<tr>
<td>TB825</td>
<td>2</td>
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<tr>
<td>TB927</td>
<td>2</td>
</tr>
<tr>
<td>TB929</td>
<td>2</td>
</tr>
</tbody>
</table>

Elective subjects

Students are advised to select a minimum of eight approved units from any one occupational orientation stream. Each subject requires two hours per week.

Suggested occupation orientation

Operations

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB830</td>
<td>2</td>
</tr>
<tr>
<td>TB831</td>
<td>2</td>
</tr>
<tr>
<td>TB832</td>
<td>2</td>
</tr>
<tr>
<td>TB833</td>
<td>2</td>
</tr>
<tr>
<td>TB834</td>
<td>2</td>
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<tr>
<td>TB835</td>
<td>2</td>
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<td>TB836</td>
<td>2</td>
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<tr>
<td>TB837</td>
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<tr>
<td>TB838</td>
<td>2</td>
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<tr>
<td>TB839</td>
<td>2</td>
</tr>
<tr>
<td>TB840</td>
<td>2</td>
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</tbody>
</table>

Design

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB832</td>
<td>2</td>
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<tr>
<td>TB836</td>
<td>2</td>
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<tr>
<td>TB837</td>
<td>2</td>
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<tr>
<td>TB839</td>
<td>2</td>
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<tr>
<td>TB840</td>
<td>2</td>
</tr>
<tr>
<td>TB843</td>
<td>2</td>
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</tbody>
</table>

Insurance

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB832</td>
<td>2</td>
</tr>
<tr>
<td>TB836</td>
<td>2</td>
</tr>
<tr>
<td>TB837</td>
<td>2</td>
</tr>
<tr>
<td>TB839</td>
<td>2</td>
</tr>
<tr>
<td>TB840</td>
<td>2</td>
</tr>
</tbody>
</table>

Course detail

The course consists of twenty-three subjects (thirty units) all of which may be taken part-time. The expected duration of the course is six years part-time, however, this may be shortened by taking advantage of those subjects offered during daytime hours.

Course structure Hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>B21CAA</td>
<td>Building Science 1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Behavioural Studies 1A (Semester 1)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Behavioural Studies 1B (Semester 2)</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Introduction to Building Law 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Elements of Town Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

B21CAA Certificate of Technology — Building (Estimating)

Career potential

The course is generally suitable for students within the following organisations:

(i) Operations (fire-fighting organisations, safety officers).
(ii) Design (installation designers, draughtspersons).
(iii) Insurance (assessors, insurance surveyors).

B21CAG Certificate of Technology — Building (Fire Technology)

Suggested occupation orientation

Operations

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB830</td>
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</tr>
<tr>
<td>TB831</td>
<td>2</td>
</tr>
<tr>
<td>TB832</td>
<td>2</td>
</tr>
<tr>
<td>TB833</td>
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<tr>
<td>TB834</td>
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<td>TB835</td>
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<td>TB836</td>
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</tr>
<tr>
<td>TB837</td>
<td>2</td>
</tr>
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<td>TB838</td>
<td>2</td>
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<td>TB839</td>
<td>2</td>
</tr>
<tr>
<td>TB840</td>
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Design

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
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<tr>
<td>TB840</td>
<td>2</td>
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<td>TB843</td>
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Insurance

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TB832</td>
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<td>TB836</td>
<td>2</td>
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<tr>
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<tr>
<td>TB840</td>
<td>2</td>
</tr>
<tr>
<td>TB843</td>
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</tbody>
</table>
**B21CAL Certificate of Advanced Building Construction**

This course will be offered from the commencement of the academic year in 1986. The certificate will be offered as full-time day, part-time day and part-time evening courses.

**Entrance requirements**

Entry to the certificate course may be by way of:

(i) Successful completion of Year 11 schooling.
(ii) An equivalent (to (i)) year of study.
(iii) A completed year of indenture in a building trade
(iv) Mature-age entry.

The single compulsory subject for entry is Year 11 English. If it has not been previously gained, however, it may be studied concurrently.

**Issue of award**

Prior to any certificate being awarded, it is necessary for the candidate to complete the academic requirement and have at least two (2) years of recent and relevant industrial experience.

**Course detail**

The course consists of core and elective subjects. Core subjects represent a total of 1,292 hours of study and elective subjects represent a total of 272 hours of study.

<table>
<thead>
<tr>
<th>Semester 1 Full-time course</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td></td>
</tr>
<tr>
<td>TB216 Building Construction 1 (Theory)</td>
<td>4</td>
</tr>
<tr>
<td>TB711 Structural Applications 1</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1 (Tutorial sessions incorporating Drafting for Builders)</td>
<td>4</td>
</tr>
<tr>
<td>TB714 Building Practice 1</td>
<td>8</td>
</tr>
<tr>
<td>TH15 Communication Studies 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB716 Building Materials and Services</td>
<td>3</td>
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<tr>
<td>TB710 Safety in Construction 1</td>
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Total = 425 hours each semester

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours week</th>
</tr>
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<tbody>
<tr>
<td>Core subjects</td>
<td></td>
</tr>
<tr>
<td>TB322 Building Construction 2 (Theory)</td>
<td>4</td>
</tr>
<tr>
<td>TB712 Structural Applications 2</td>
<td>2</td>
</tr>
<tr>
<td>TB323 Building Construction 2 (Tutorial sessions incorporating Design/Specification)</td>
<td>4</td>
</tr>
<tr>
<td>TB715 Building Practice 2</td>
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<td>TH116 Communication Studies 1B</td>
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</tr>
<tr>
<td>TB701 Construction Surveying (Introduction)</td>
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<tr>
<td>TB703 Regulations and Government Authorities</td>
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Total = 425 hours each semester

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core subjects</td>
<td></td>
</tr>
<tr>
<td>TB717 Building Materials and Services (Major Bldgs)</td>
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</tr>
<tr>
<td>TB718 Quantity Surveying for Builders 1</td>
<td>4</td>
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<tr>
<td>TB720 Estimating and Cost Control 1</td>
<td>2</td>
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<tr>
<td>TB704 Contract Law and Contract Administration</td>
<td>3</td>
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<tr>
<td>TB722 Network Scheduling for Critical Path 1</td>
<td>3</td>
</tr>
<tr>
<td>TB705 Site Supervision and Management</td>
<td>2</td>
</tr>
<tr>
<td>TB706 Self Development and Interpersonal Skills</td>
<td>2</td>
</tr>
<tr>
<td>TB724 Industrial Relations A</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection (A and B)</td>
<td>4</td>
</tr>
<tr>
<td>TB707 Business Management for Builders</td>
<td>2</td>
</tr>
</tbody>
</table>

Total = 442 hours each semester

**Special courses**

**B42CAK Scaffolding Inspection**

Scaffolding Inspection meets the requirements of the building surveyor's course, the building inspector's course, and is suitable for those who are to be employed as scaffolding inspectors. The duration of the subject is one year, based on two hours per week.

<table>
<thead>
<tr>
<th>Course structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB435 Scaffolding Inspection A</td>
</tr>
<tr>
<td>TB439 Scaffolding Inspection B</td>
</tr>
</tbody>
</table>

**B42CBQ Timber Framing Code**

As a result of changes to the Uniform Building Regulations, the provisions of the Timber Framing Code AS1684-1979 are being increasingly enforced by Local Authorities.

The course requires a minimum of 24 hours class study. At the end of the course there will be an assessment based on a practical exercise that covers the major aspect of the Timber Framing Code.

<table>
<thead>
<tr>
<th>Course structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB940 Timber Framing Code</td>
</tr>
</tbody>
</table>
Plumbing and Gasfitting courses

The following courses are offered by the Plumbing and Mechanical Services Department.

Apprenticeship courses

Three separate apprenticeship courses are available to serve the classification of the apprenticeship being undertaken:

- **T23 Plumbing — Sanitary, General and Gasfitting (P32CDB)**
- **T23A Plumbing — Mechanical Services, General and Gasfitting (P32CDD)**
- **32CDA — Plumbing (P32CDA)**

**T23 and T23A**

T23 and T23A are available for repeat students only in the evening and comply with the Industrial Training Commission of Victoria requirements of being in modular form. This type of training program, introduced in 1971, is designed to provide flexibility of progression during the three years the student is attending.

Courses for both these apprenticeships are common for twenty of the twenty-eight modules.

Students completing one of these apprenticeship courses may undertake and qualify in an alternative apprenticeship course by completing the eight specialist modules successfully.

Qualifying examinations are conducted twice yearly in June/July and November/December.

**32CDA**

The third apprenticeship course 32CDA was introduced in 1980 as a pilot course under the Systems Approach to Learning Scheme.

This gives the students active participation with 'on-site' situations that they may encounter in plumbing installations, and meets the needs of the Industrial Training Commission of Victoria and the National Basic Trade Common Course in Plumbing and Gasfitting.

The students are required to attend part-time Block release for this course which comprises one thousand and forty hours of student learning over three stages. Stage 1 and 2 comprise eight hundred and fifty hours and make up the basic units. To complete the course, students in consultation with their employers and the College will select the final study area. Students may undertake any of the other alternative study areas in their own time.

Further details of this course are available from Mr. L.J. Walker, 819 8518.

Technician courses

Four technician courses are available to serve the specific needs of people involved in the plumbing and mechanical services industry.

- **P34CDD Technician Certificate — Plumbing (Heating, Ventilation and Air-conditioning)**
- **P34CDC Technician Certificate — Plumbing (Gasfitting)**
- **P34CDB Technician Certificate — Plumbing (Sanitary)**

The purposes of the above courses is to train qualified tradespersons in the more advanced techniques of the various branches of the plumbing and mechanical services industry.

**P34CDE Technician Certificate — Plant Services Detail Drafting**

The usual duration of this course is three years part-time and it is designed to train personnel in the preparation of detailed working drawings of heating, ventilating, air-conditioning and refrigeration systems and services for private, commercial and industrial projects.

**Enquiries:** Mr. L.J. Walker, 819 8518.
### Apprenticeship course details

#### P32CDB Plumbing — Sanitary, General and Gasfitting

**Course structure T23**

**Sanitary, Mechanical Services, General and Gasfitting**

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP01</td>
<td>1 Drawing</td>
</tr>
<tr>
<td>TP02</td>
<td>2 Calculations, science and communication</td>
</tr>
<tr>
<td>TP03</td>
<td>3 Sanitary plumbing drainage welding and cutting</td>
</tr>
<tr>
<td>TP04</td>
<td>4 Roof plumbing and soldering</td>
</tr>
<tr>
<td>TP05</td>
<td>5 Water supply and gasfitting</td>
</tr>
<tr>
<td>TP06</td>
<td>6 Sheet lead and sheetmetal</td>
</tr>
<tr>
<td>TP07</td>
<td>7 Roof plumbing</td>
</tr>
<tr>
<td>TP08</td>
<td>8 Copper tube and mild steel sections</td>
</tr>
<tr>
<td>TP09</td>
<td>9 Drawing and building cost</td>
</tr>
<tr>
<td>TP10</td>
<td>10 Roof plumbing</td>
</tr>
<tr>
<td>TP11</td>
<td>11 Sheetmetal</td>
</tr>
<tr>
<td>TP12</td>
<td>12 Roof plumbing</td>
</tr>
<tr>
<td>TP13</td>
<td>13 Gasfitting and heaters</td>
</tr>
<tr>
<td>TP14</td>
<td>14 Welding and cutting</td>
</tr>
<tr>
<td>TP15</td>
<td>15 Mild steel sections</td>
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</table>

#### Sanitary, General and Gasfitting

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
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<tbody>
<tr>
<td>TP16</td>
<td>A51 Sanitary plumbing</td>
</tr>
<tr>
<td>TP17</td>
<td>A52 Drainage</td>
</tr>
<tr>
<td>TP18</td>
<td>A53 Water supply</td>
</tr>
<tr>
<td>TP19</td>
<td>A54 Sheet lead</td>
</tr>
<tr>
<td>TP20</td>
<td>A55 Copper tube and plastics</td>
</tr>
<tr>
<td>TP21</td>
<td>A56 Sanitary plumbing</td>
</tr>
<tr>
<td>TP22</td>
<td>A57 Drainage</td>
</tr>
<tr>
<td>TP23</td>
<td>A58 Water supply</td>
</tr>
<tr>
<td>TP24</td>
<td>A59 Gasfitting</td>
</tr>
<tr>
<td>TP25</td>
<td>A60 Welding and cutting</td>
</tr>
<tr>
<td>TP26</td>
<td>A61 Sheet lead and plastics</td>
</tr>
<tr>
<td>TP27</td>
<td>A62 Mild steel sections</td>
</tr>
<tr>
<td>TP28</td>
<td>A63 Copper tube and special materials</td>
</tr>
<tr>
<td>TP30</td>
<td>A64 Plumbing — Sanitary Theory 3 Final</td>
</tr>
<tr>
<td>TP31</td>
<td>A65 Plumbing — Sanitary General and Gasfitting Practice 3 Final</td>
</tr>
<tr>
<td>TP32</td>
<td>A66 Plumbing — Gasfitting Theory 3 Final</td>
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<tr>
<td>TP33</td>
<td>A67 Plumbing — General Theory 3 Final</td>
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#### Course structure 32CDA

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
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<tbody>
<tr>
<td>TP901</td>
<td>1 Introductory Skills (10 units)</td>
</tr>
<tr>
<td>TP902</td>
<td>2 Drainage (5 units)</td>
</tr>
<tr>
<td>TP903</td>
<td>3 Sanitary and Water Supply (16 units)</td>
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<tr>
<td>TP904</td>
<td>4 Gas and Water Supply (9 units)</td>
</tr>
<tr>
<td>TP905</td>
<td>5 Roof and Water Supply (10 units)</td>
</tr>
<tr>
<td>TP906</td>
<td>6 Mechanical Services and Water Supply (10 units)</td>
</tr>
<tr>
<td>TP907</td>
<td>7 Sanitary and Water Supply (6 units)</td>
</tr>
<tr>
<td>TP908</td>
<td>8 Gas (Interim) (1 unit)</td>
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<tr>
<td>TP910</td>
<td>9 Mechanical Services and Water Supply (5 units)</td>
</tr>
<tr>
<td>TP912</td>
<td>10 Advanced Waste Disposal and Drainage Final Exam</td>
</tr>
<tr>
<td>TP913</td>
<td>11 Advanced Gas Interim Final Exam</td>
</tr>
<tr>
<td>TP915</td>
<td>12 Advanced Mechanical Services Final Exam</td>
</tr>
<tr>
<td>TP916</td>
<td>13 Advanced Water Supply Final Exam</td>
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</table>

#### Hours per course (Block release)

- **Year 1** — four hundred hours (five x eighty hours)
- **Year 2** — three hundred and twenty hours (eight x forty hours)
- **Year 3** — three hundred and twenty hours (eight x forty hours)

### Advanced study subjects of the 32CDA syllabus course

Students wishing to undertake advanced units may apply to the head of the department.
**Technician course details**

**P34CDD Technician — Plumbing (Heating, Ventilation and Air-conditioning)**

This course began at Swinburne College of TAFE in 1959 and was revised in 1970 and again in 1979.

**Career potential**
The purpose of the course is to train qualified tradespersons in the more advanced techniques of air-conditioning installations, to develop in technicians the expertise necessary for the supervision of complex air-conditioning installations and to train qualified tradespersons to provide adequate support to management in large air-conditioning organisations.

**Prerequisites**
Students should have completed or be undertaking an apprenticeship course, in a trade related to the air-conditioning industry.

Entry to the course is permitted if, in the opinion of the Director of the College, the applicant has the ability to complete the course successfully or is engaged in related employment.

**Award of certificate**
The technician certificate is awarded to any student who completes the following:

The requisite number of units from the various groups of subjects, plus completion of an approved apprenticeship course, i.e. Plumbing and Gasfitter, Electrical Mechanics, Fitting and Machinary, Refrigeration.

**Unit**
A unit is two hours study per week for one semester.

**Course structure**

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Code</th>
<th>Title</th>
<th>Hours per week</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td><strong>Group 1</strong> General</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TH140</td>
<td>English 1T</td>
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<td></td>
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<tr>
<td></td>
<td>TM130</td>
<td>Mathematics 1T</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>TM170</td>
<td>Science (Physics) 1T</td>
<td>2</td>
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<tr>
<td><strong>Advanced or specialist units</strong></td>
<td></td>
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<td></td>
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<td></td>
<td>TH240</td>
<td>English 2T</td>
<td>2</td>
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<tr>
<td></td>
<td>TM230</td>
<td>Mathematics 2T</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td>TM270</td>
<td>Science (Physics) 2T</td>
<td>2</td>
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<tr>
<td><strong>Group 2</strong> Related background studies</td>
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<tr>
<td></td>
<td>TP237</td>
<td>Process Heating</td>
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<td></td>
<td>TP238</td>
<td>Fluid Mechanics</td>
<td>1</td>
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<td></td>
<td>TP185</td>
<td>Plant Services Drafting</td>
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<td>TB220</td>
<td>Building Science 1A and 1B</td>
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<tr>
<td></td>
<td>TP421</td>
<td>Site Supervision and Organisation (Foremanship)</td>
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<td></td>
<td>TP310</td>
<td>Contracts and Building Law (Sub-contracts)</td>
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<td></td>
<td>TP453</td>
<td>Mechanical Services Drafting</td>
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<tr>
<td><strong>Group 3</strong> General practices</td>
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<td>TP358</td>
<td>Reticulated Systems 1T 2</td>
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<td></td>
<td>TP450</td>
<td>Instrumentation</td>
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<tr>
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<td></td>
<td>TP458</td>
<td>Reticulated Systems 2T 2</td>
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<td>TP451</td>
<td>Electrical and-controls</td>
<td>1</td>
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<td><strong>Group 4</strong> Specialist practices</td>
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<td></td>
<td>TP348</td>
<td>Air-conditioning 1T</td>
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<tr>
<td></td>
<td>TP349</td>
<td>Refrigeration 1T</td>
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<td></td>
<td>TP490</td>
<td>Installation of Solar Energy Systems</td>
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<tr>
<td><strong>Advanced or specialist units</strong></td>
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<td></td>
<td>TP448</td>
<td>Air-conditioning 2T</td>
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<tr>
<td></td>
<td>TP449</td>
<td>Refrigeration 2T</td>
<td>2</td>
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</tr>
<tr>
<td></td>
<td>TP452</td>
<td>Balancing and Commissioning</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The student may select the order in which to attempt the subjects. The course will comprise twenty-six units:

- All twelve units from Group 1;
- At least six units from Groups 2 and 3;
- At least four units from Group 4.

P34CDC Technician — Plumbing (Gasfitting)

**Career potential**
The course is designed to train qualified tradespersons in the more advanced techniques of installing and servicing modern gas appliances in building complexes. Certificated technicians will have developed a particular expertise which will enable them to diagnose and rectify faults in more intricate modern gas installations.

**Prerequisites**
Students must be registered with the Plumbers and Gasfitters Registration Board or be undertaking the relevant apprenticeship course.

Entry to the course is permitted if, in the opinion of the Director of the College, the applicant has the ability to complete the course successfully or is engaged in related employment.

**Award of certificate**
The technician certificate is awarded to any student who completes the following:

The requisite subjects of the course plus completion of the approved plumbing and gasfitting apprenticeship.

**Course structure**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours per week</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TH140</td>
<td>English 1T</td>
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</tr>
<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
<td>2</td>
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</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
<td>2</td>
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<tr>
<td><strong>2nd year</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
<td>2</td>
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</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
<td>2</td>
<td></td>
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<tr>
<td>TM270</td>
<td>Science 2T</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TP237</td>
<td>Process Heating (1 semester)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TP238</td>
<td>Fluid Mechanics (1 semester)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
<td></td>
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<tr>
<td>TP358</td>
<td>Reticulated Systems 1T 2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TP335</td>
<td>Gas Technology 1T (Fundamentals of Gas Technology A and B)</td>
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<tr>
<td><strong>4th year</strong></td>
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</tr>
<tr>
<td>TE161</td>
<td>Electronics B*</td>
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</tr>
<tr>
<td>TP434</td>
<td>Gas Technology 2T A (Gas Control Techniques 1A and 1B)</td>
<td>2</td>
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<tr>
<td>TP435</td>
<td>Gas Technology 2T B (Gas Control Techniques 2A and 2B)</td>
<td>2</td>
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</tbody>
</table>

*Electronics A and B equal TE326 Industrial Electronics 1T

P34CDB Technician — Plumbing (Sanitary)

This course began at Swinburne College of TAFE in 1975, at the request of representatives from the plumbing industry and is available either as a total course or as individual units to serve specific needs. 'Units' are defined as 2 hours' study per semester.

**Career potential**
The purpose of the course is to train qualified tradesmen in the more advanced techniques of complex modern sanitary installations; to develop in technicians, the expertise necessary for the supervision of complex sanitary installations and to train qualified tradesmen to provide adequate support to management in large plumbing organisations.

**Prerequisites**
Students must be registered with the Plumbers and Gasfitters Registration Board or be undertaking the relevant apprenticeship course.

Entry to the course is permitted if, in the opinion of the Director of the College, the applicant has the ability to complete the course successfully or is engaged in related employment.
Award of certificate
The technician certificate is awarded to any student who completes the following:

The requisite number of units from the various groups of subjects plus completion of the approved plumbing and gasfitting apprenticeship.

Course structure

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Unit value</th>
<th>Group 1</th>
<th>General (For students without approved Year 11 English, Mathematics and Science)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH140</td>
<td>1T</td>
<td>TH140</td>
<td>English 1T</td>
</tr>
<tr>
<td>TM130</td>
<td>1T</td>
<td>TM130</td>
<td>Mathematics 1T</td>
</tr>
<tr>
<td>TM170</td>
<td>1T</td>
<td>TM170</td>
<td>Science (Physics) 1T</td>
</tr>
<tr>
<td>Advanced or specialist units</td>
<td></td>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TM270</td>
<td>Science (Physics) 2T</td>
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<tr>
<td></td>
<td></td>
<td>TP210</td>
<td>Communication and Technical Reports</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2</th>
<th>Related background studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP316</td>
<td>Quantity Surveying (Plumbing)</td>
</tr>
<tr>
<td>TP310</td>
<td>Contract and Building Law</td>
</tr>
<tr>
<td>TP421</td>
<td>Site Supervision and Organisation (Foremanship)</td>
</tr>
<tr>
<td>TP260</td>
<td>Plan Reading</td>
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<tr>
<td>TP262</td>
<td>Building Science 1A and 1B</td>
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</table>

<table>
<thead>
<tr>
<th>Group 3</th>
<th>General building practices</th>
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<tbody>
<tr>
<td>TP240</td>
<td>Construction Methods and Practices</td>
</tr>
<tr>
<td>TP240</td>
<td>Plant and Equipment (Plumbing)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 4</th>
<th>Specialist practices</th>
</tr>
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<tbody>
<tr>
<td>TP340</td>
<td>Pipeline Design A</td>
</tr>
<tr>
<td>TP341</td>
<td>Pipeline Design B</td>
</tr>
<tr>
<td>TP418</td>
<td>Drainage Design</td>
</tr>
<tr>
<td>TP490</td>
<td>Installation of Solar Energy Systems</td>
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<table>
<thead>
<tr>
<th>Advanced or specialist units</th>
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</thead>
<tbody>
<tr>
<td>TP348</td>
<td>Air-conditioning 1T</td>
</tr>
<tr>
<td>TP349</td>
<td>Refrigeration 1T</td>
</tr>
<tr>
<td>Approved elective</td>
<td>2</td>
</tr>
</tbody>
</table>

The student may select the order in which to attempt the subjects. The course will consist of twenty-six units:
- All twelve units from Group 1;
- At least eight units from Groups 2 and 3;
- At least four units from Group 4.

Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>First year</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP181</td>
<td>Pipe and Duct Fitting 1T</td>
<td></td>
</tr>
<tr>
<td>TP180</td>
<td>Plant Services Drafting 1T</td>
<td></td>
</tr>
<tr>
<td>TP182</td>
<td>Building (parameters) Appreciation 1T</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Second year</th>
<th>2</th>
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<tbody>
<tr>
<td>TP281</td>
<td>Pipe and Duct Fitting 2T</td>
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</tr>
<tr>
<td>TP280</td>
<td>Plant Services Drafting 2T</td>
<td></td>
</tr>
<tr>
<td>TP282</td>
<td>Plant Equipment 1T</td>
<td></td>
</tr>
<tr>
<td>TP358</td>
<td>Reticulated Systems 1T</td>
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<thead>
<tr>
<th>Course</th>
<th>Third year</th>
<th>2</th>
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<tbody>
<tr>
<td>TP380</td>
<td>Plant Services Drafting 3T</td>
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</tr>
<tr>
<td>TP382</td>
<td>Plant Equipment 2T</td>
<td></td>
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<tr>
<td>TP348</td>
<td>Air-conditioning 1T</td>
<td></td>
</tr>
<tr>
<td>TP349</td>
<td>Refrigeration 1T</td>
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<tr>
<td>Approved elective</td>
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P34CDE Technician — Plant Services Detail Drafting

Career potential
The usual duration of this course is three years. It is designed to train personnel in the preparation of detailed working drawings of heating, ventilating, air-conditioning and refrigerating systems and the essential services for private, commercial and industrial projects.

Entrance requirements
Passes in Year 11 Technical English, General Mathematics (technician), Technician Science ‘A’, Technical Drawing ‘A’ or ‘B’ or approved equivalents. Trade training is not a prerequisite for the course. Applicants who have successfully completed a technician course will be considered to have completed the necessary entrance requirements and may be entitled to some subject exemptions.
Subject details

This section contains a brief description of the various subjects in all courses offered by the Building Division. Subjects are listed in alpha-numeric order of subject codes. The Carpentry and Joinery Modules and Plumbing and Gasfitting Modules are listed at the end of the subject details.

TB1001 Building Practices A and B

These subjects are designed to make students conversant with the skills and techniques of building practices and with the manner in which these are related to the current needs of industry. Building Practices A and Building Practices B are considered to be equivalent to the program for Carpentry and Joinery apprentices in Victoria, by the Carpentry and Joinery Trade Committee of the Industrial Training Commission.

TB110 and TP310 Contracts and Building Law

The role of the architect in building, the obligations of the architect and builder, types and conditions of contracts, tenders and building requirements.

TB120 Advanced Building Graphics

Techniques of graphic communication applied to building.

TB125 Building Mathematics (T)


TB132 Survey Cartographic Drafting 1H

Introduction to modern survey instrumentation. Topographical, hydrographic, underground geodetic and cadastral surveys. Introduction to town planning. Drafting and examination of field notes.

TB134 Social Science

Participation in activities which will provide a background for students following a building career.

TB144 and TB250 Survey 1H, Parts 1 and 2

Details of this subject have not as yet been determined.

TB160 Site Organisation and Administration

The general aim of this subject is to develop further the student's ability to administer the on-site activities that occur during the day to day activities of a construction company.

TB195 Structural Drafting 1A and 1B

Usual prerequisite for this subject is a pass in Year 11 Technical Drawing A. Course includes practical drafting and lectures on use of steel sections, splicing, connections, standard drawing practice. Structural terms, reinforced concrete, timber.

TB196 Structural Practices 1A and 1B

Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial type buildings.

TB197 Structural Mechanics 1A and 1B

Review of statics, external forces acting on rigid bodies, principles of equilibrium, internal forces within rigid bodies. Load-deformation characteristics of materials. Structural joints and connections. Laboratory work.

TB216 Building Construction 1A

Basic principles of structure. Timber technology. Domestic building construction including timber framing, brickwork, masonry, foundations, footing, roof plumbing, joist, internal fittings, services, plastering, painting, Simple concrete work.

TB217 Building Construction 1B

A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted for examination at the end of the year. Some of the drawings will be solutions to given problems.

TB220 Building Science (T)


TB222 Technical Reports (Building)

Summaries, comprehension, records used in industry, types of reports (written and oral), Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

TB241 Services in Buildings

A study of services to, from and within a building or site, including electrical, mechanical, hydraulic, civil and interior decoration services.

TB242 Basic Quantities and Estimating

An introduction to quantity taking and estimating in the building industry.

TB250 and TB144 Survey 1H, Parts 1 and 2

Details of this subject have not as yet been determined.

TB263 Estimating and Quantity Surveying (Plumbing)

To develop techniques and skills in estimating, pricing, cash flow and related matters, including pricing, overhead and profit, tenders, rise and fall considerations, progress payments.

TB280 Specifications 1A and 1B

This subject is intended to be studied in breadth rather than in depth. It is intended to be an introduction to specifications and to give the student an awareness of the importance of specifications. It is also proposed that Specifications 1 be a prerequisite to Specifications 2.

TB295 Structural Drafting 2A and 2B

Usual prerequisite is a pass in Structural Drafting 1H. Project drafting work and necessary theory in structural features, external features multi-storey buildings, large industrial building, composite type building, concrete projects, detailing from an engineering specification.

TB296 Structural Practices 2A and 2B

Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

TB297 Structural Mechanics 2A and 2B

Extends Structural Mechanics 1A and 1B and deals with more complicated structures.

TB307 Structural Design Drafting 1A and 1B

Usual prerequisites for this subject are passes in Structural Drafting and Structural Practices. The subject is concerned with design drafting practice in a variety of realistic situations.

TB320 Building Science 2

To extend work covered in TB30 Building Science 1 and to give students a practical, basic working knowledge of the important areas of modern building services.

TB321 Fire Insurance (1 unit)

Risk assessment, rating principles, rating factors, previous factors, policy clauses, claims and reinsurance.

TB322 Building Construction 2A


TB323 Building Construction 2B

A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions to given problems.

TB362 Estimating and Costing

To develop skills in general methods of detailed estimating and costing used for the purpose of tendering. Measuring and adjusting related to variations to contracted work.
TB366 Practical Structures and Practical Workshop
This subject should provide students with a practical appreciation of the physical and mechanical properties of materials, and their application as basic components of structure.

TB397 Structural Mechanics 3A and 3B
Further extension of Structural Mechanics 1A and 1B, 2A and 2B.

TB407 Structural Design Drafting 2A and 2B
Further work in extension of Structural Design Drafting 1A and 1B.

TB408 Foundations 1A and 1B

TB412 Building Construction 3A

TB413 Building Construction 3B
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions to given problems.

TB417 Building Surveying (T) Theory, Mathematics, Field
Areas of plane figures and volumes of solids. Use of levelling instruments (dumpy, theodolite, etc.). Measuring distances, recording observations, datum points, bench marks, grades, bearings.

TB419 Specifications, Drawing Interpretations and Co-ordination
Study of the interrelationship of contract documents (including drawings, specifications and related architect's instructions) and the documentation of matters arising therefrom.

TB426 Building Administration and Supervision
Approached from the points of view of the builder, the client and public authorities.

TB427 Building Construction 2C

TB428 Building Construction 3C
Design principles applied to structures.

TB430 Building Science 1 (Building Surveyors)

TB431 English Report Writing (Library and Thesis)
See TH116 Communication Studies 1B.

TB433 Basic Supervision
This subject is designed to allow a student to gain an overview of business organisations, to understand a supervisor's role within an organisation and to develop and understand the principles, skills and attitudes necessary for supervisors to carry out their functions. The topics covered include: the supervisor's skills, functions and relationships with subordinates, organization charts and how the supervisor fits into that structure, problem-solving techniques, the theories of Maslow and Herzberg and how they can benefit productivity, leadership styles, delegation, appraisals, team building, grievances and managing stress.

This subject is part of a longer supervision certificate which consists of this unit and two other units.

TB435 and TB439 Scaffolding Inspection A and B
Covers interpretation of scaffolding regulations, defines responsibilities of all persons involved in the provision, erection, and use of scaffolding, including steel tube, frames, suspended cantilever bracket, ladders and miscellaneous equipment.

TB436 Practical Inspection (Building)
Designed to train potential building inspectors to inspect construction. The aims of inspection include: protection to owners, builders and workers, prevention of unsound practices and strict adherence to codes of material and craftsmanship.

TB437 Statutory Control of Buildings
Administration and law. Regulatory control and inspectional procedure.

TB439 and TB435 Scaffolding inspection A and B
Covers interpretation of scaffolding regulations, defines responsibilities of all persons involved in the provision, erection, and use of scaffolding, including steel tube, frames, suspended cantilever bracket, ladders and miscellaneous equipment.

TB440 Builders Quantities
The subject covers the basic principles for measuring the quantities and preparing order lists of materials required by all building trades concerned with the erection of simple, designed buildings of orthodox construction, and is to be studied for two hours per week for two semesters.

TB452 Industrial Relations 1A and 1B
A study of interrelationship of management and the work force in the building industry.

TB503 and TB502 Quantity Surveying 1 and Quantity Surveying H

TB504 Applied Geomechanics

TB516 Building Community Development
Development of communities and the building used. The interactions of both in social and economic terms.

TB520 Role and Function of a Clerk of Works
A study of terms of employment, ethics and duties of a clerk of works.

TB530 Network Scheduling for Critical Path Analysis
Network planning and construction applicable to the building industry.

TB552 Quantity Surveying 2
Quantity Surveying 2 is planned to develop the student's usefulness in employment and includes the measurement of more complicated structures. The year's work should include the measurement of excavator, concreter, bricklayer, carpenter, joiner and sundry metalwork items.

TB601 Professional Practice of a Building Surveyor
Administration and law. Town planning. Building regulations.

TB822 Principles of Fire Behaviour (2 units)
Combustion, process of burning and fire tests. Laboratory work and visits will be incorporated into this subject.
TB823 Fire-fighting Equipment and its Application (2 units)
Theory and application of fire-fighting media, vehicles and appliances, aerial equipment, special appliances and protective equipment. Students will be involved in practical use of appliances, and be required to do work placements to enable them to experience actual fire situations.

TB824 Fire Safety Management (2 units)
Community laws and regulations, psychology of individual or group behaviour in stress and fire drill situations, fire safety management planning.

TB825 Detection and Suppression System (2 units)
To enable students to evaluate, design and interpret plants, designs and specifications of different types of fire detection and suppression systems.

TB826 Building Structures and Methods 1 (2 units)
To impart an understanding of the general principles, methods of construction and protection for all types of structures — domestic in residential, commercial and industrial low-rise, multi-storey and special structures, and to acquaint the student with all types of materials used in these structures. The subject will include reading and interpretation of drawings, design criteria and function.

TB829 Material Science (2 units)
Material behaviour in fire conditions, structural behaviour under fire load. Visits to experimental testing stations are included in this subject.

TB830 Command and Communication (2 units)
Methods of communications, pre-planning, fire ground control and tactics, evacuation and rescue, safety of personnel and public, entry and ventilation, salvage and overhaul, other support and emergency services.

TB831 Personnel Emergency Treatment (1 unit)
This subject equips the student with basic first-aid to enable them to assist in an emergency situation. The course follows the syllabus set out in the St. John Ambulance Association Fire-Aid Course.

TB832 Fire Investigation (1 unit)
Designed to give the students an appreciation of the various agencies carrying out fire investigation; and to give an outline of the methods used in fire investigation by each agency.

TB833 Rural Fire Behaviour and Detection (2 units)
To enable the students to understand the principles and methods used for fire prevention and protection in grasslands and forest fires and covers fire behaviour, fire weather, fire prevention, fire protection, fire control.

TB836 Special Hazards (2 units)
Enables students to recognise the special fire hazards of various materials, and of various complex building structures and other installations covering hazardous materials and substances, high life-risk situations, high-risk industries and high-risk activities.

TB837 Detection and Suppression Design 1 (2 units)
Develops students’ skills in designing fire sprinkler systems, fire alarm systems based on relevant Australian standards.

TB838 Detection and Suppression Design 2 (2 units)
Further develops students’ skills in design of sprinklers, alarm systems and other specialised systems.

TB839 Introduction to Law 1A (1 unit)

TB840 Fire-related Law (1 unit)
The role of tests, standards and codes, acts and regulations, legal responsibility and liability of personnel involved in fire situations.

TB843 Building Services (2 units)
Mechanical vertical and horizontal transportation, heating, ventilating and air-conditioning services, hydraulic services, electrical services and specialist services.

TB940 Timber Framing Code
The aim of this subject is to explain the requirements of this National Code and give some practice in establishing the appropriate sizes of structural members in timber-framed buildings.

TE326 Industrial Electronics 1T
Resistors, Capacitors, Inductors, Transformers, AC and DC Circuits, Diodes, Triodes, Transistors, Amplifiers, Thyatron control services, CRO, VTVM.

TE412 Industrial Electronics 2T

TH115 Communication Studies 1A (1 unit)
Communication theory and its application to the collection, organisation and presentation of scientific information. Forms of task documentation: laboratory and project reports, memos and letters. Oral reports and presentations.

TH116 Communication Studies 1B (4 units)
Research and presentation of analytical reports, job briefs and specifications. Group communications skills: meetings, discussions and interviews. Audio-visual techniques and presentations.

TH140 English 1T
Development of ability to read with comprehension and appreciation. Practice in oral and written English. Preparation of clear, concise notes and summaries.

TH145 English (Building Technician)

TH240 English 2T

TM120 Mathematics 1A and 1B (1H)
Five hours per week, daytime for one semester or two hours per week, evening for two semesters. Assessment consists of class work (thirty per cent) and a final examination (seventy per cent) This unit deals with the following areas of mathematics: equations and formulae, relations and functions, trigonometry and an introduction to calculus. It is designed as a preparatory mathematics course leading to the Mathematics 2H unit.

References

TM129 Applied Mathematics (2 units)
Basic mathematical operations, indices, algebraic manipulations, trigonometric functions, graphs and statistics, heat and fluid mechanics.
TM130  Mathematics 1T
Two hours per week, daytime or evening, full year
Prerequisites: Year 10 mathematics or equivalent and adult entry
Assessment: periodic tests and assignments and a final three-hour examination in November
This course is devoted to teaching basic mathematics of algebra and trigonometry and assumes very limited prior knowledge of these areas. Topics covered are fundamental operation of arithmetic and algebra, transpositions, graphs, trigonometry, factorisation, solution; equations, all linear and quadratic and logarithms.
Students enrolled in TM130 usually study Science 1T (TM170) also. These subjects are time-tabled in a four-hour block.

References
Supplied notes.

TM170  Science 1T
Two hours per week, day or evening over two semesters
Prerequisites. Year 10 Science or equivalent and adult entry
Assessment: periodic tests and assignments and a final three-hour examination in November
The course is aimed at teaching basic physics in S.I units, vectors, equilibrium, kinetics, Newton's three laws of motions, work power and energy, heat, Ohm's law and basic electric circuits. References are supplied notes.
Students enrolled in TM170 normally study Mathematics 1T (TM130) concurrently, the two subjects are time-tabled in a four-hour block.

TM220  Mathematics 2H
Full-time: five hours per week, day for one semester
Part-time: two hours per week daytime or evening for two semesters
Prerequisite: TM120 Mathematics 1H
Assessment consists of one external examination paper for qualifying students.
The subject consists of the following topics for which assignments must be completed. Trigonometry; differentiation from first principles; techniques of differentiation; equation of tangents and normals; graphs of polynomial, exponential and logarithmic functions; solution of simultaneous equations; complex numbers; small increments and approximations; calculus and ratios; mean and root mean square; work; volume of revolution; differential equations; optimisation theory; centre of mass, centroids and second moments of area; parallel and perpendicular axis theorem; centre of pressure. Revision tests are also included throughout the year.

References
No set text is required. Booklets covering the subject are supplied. The following texts are recommended for background reading:

TM229  Basic Fire Chemistry
(2 units)
General chemistry, introductory organic and inorganic chemistry, fundamentals of thermodynamics, chemical and thermodynamic properties of some common materials.

TM230  Mathematics 2T
Two hours per week, evening over two semesters
Prerequisites: Mathematics 1T, adult entry, or qualifications deemed equivalent by the Head of Department. Mathematics/Science Assessment: class work (forty per cent) and one final examination (sixty per cent)
An extension of Mathematics 1T. The topics include: review of basic algebra, advanced units in algebra, graphs of special functions, analysis of experimental data, advanced units in trigonometry, arithmetic and geometric progressions, statistics.
Students enrolled in TM230 usually study Science 2T (TM270) concurrently, the two subjects are time-tabled in a four-hour block.
References used are supplied notes.

TM270  Science 2T
Two hours per week evening over two semesters
Prerequisites: Science 2T, adult entry, or qualifications deemed equivalent by the Mathematics/Science, Head of Department Assessment: class work (40%) and one final examination (60%)
An extension of Science 1T. The topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, rotational dynamics.

Students enrolled in TM270 normally study Mathematics (TM230) concurrently, the two subjects being time-tabled in a four-hour block.

References
Supplied notes.

TP180 and TP280  Plant Services Drafting 1T and 2T  (2 units)
Deals with detailing of elements of systems and layouts of relatively simple systems associated with the heating, ventilating, air-conditioning and refrigerating services. The work performed will be in line with the work covered in the subjects Pipe and Duct Fitting 1T and 2T.

TP181  Pipe and Duct Fitting 1T
This subject is designed to give the student a basic knowledge of the types of tools and materials used for the fabrication and installation of pipe and duct systems. Basic elementary use of these tools and materials.

TP182  Building Appreciation 1T
To familiarise the student with terms used in the building industry and to develop the ability to read architectural drawings in conjunction with mechanical drawings and extract relevant information and dimensions.

TP210  Communication and Technical Reports
To develop skills in all aspects of communication and report writing as applied to the building industry with particular reference to communications between project operations and head office, plus, the necessity to maintain accurate records. The course will comprise: methods of communication, clear thinking and summary writing, preparation and presentation of reports, application of graphics, operations requiring records, records filing, oral reports, conducting meetings.

TP237  Process Heating

TP238  Fluid Mechanics

TP240  Construction Methods and Practice (Plumbing)
To develop an understanding of structural systems and their organisation with particular reference to the effect on plumbing systems.

TP260  Plan Reading (Plumbing)  (1 unit)
Review the principles of specification report writing and understand the structure and use of specifications and drawings.

TP261  Business Practice and Basic Bookkeeping (Plumbing)
Basic accounting concepts, basic data processing, accounting for contractors, office accounting techniques.

TP280 and TP180  Plant Services Drafting 1T and 2T  (2 units)
Deals with detailing of elements of systems and layouts of relatively simple systems associated with the heating, ventilating, air-conditioning and refrigerating services. The work performed will be in line with the work covered in the subjects Pipe and Duct Fitting 1T and 2T.

TP281  Pipe and Duct Fitting 2T
A practical exercise in the fabrication and installation of different components of a ducted heating system.

TP282  Plant Equipment 1T
The study of mechanical services equipment such as boilers, chillers, pumps, etc., their operation and methods of control. To develop the ability to sketch and draw schematic plant room layouts incorporating equipment, pipework, valves and controls.

TP310 and TB110  Contracts and Building Law
The role of the architect in building, the obligations of the architect and builder, types and conditions of contracts, tenders and building requirements.
TP316  Quantity Surveying (Plumbing)
To develop basic skills in the taking-off of quantities in preparation for estimating and pricing, including units of measurement, simple quantities, standard mode of measurement, bills of quantities.

TP320  Basic Measuring and Levelling (Plumbing)
To develop the efficient use of levelling instruments, make accurate recording of levels and methods of setting out plumbing installations

TP335  Gas Technology 1T (Fundamentals of gas technology)

TP340  Pipeline Design 'A' Sanitary Plumbing (1 unit)
To develop an understanding of theoretical consideration of factors governing the design of sanitary plumbing installations as required by the Victorian Standard Sewerage Code and the Melbourne and Metropolitan Board of Works By-laws. The principles of sketching of designs to obtain detailed information.

TP341  Pipeline Design 'B' (1 unit)
To apply the requirements of the Victorian Standard Sewerage Code and the Melbourne and Metropolitan Board of Works to the drafting and design of sanitary plumbing installations. To develop drafting skills necessary to prepare sanitary plumbing pipeline design drawings.

TP348  Air-conditioning 1T
The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour; superheated vapours and the use of steam tables. Psychrometry covering humidity, dew point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

TP349  Refrigeration 1T
The theory of heating and cooling of liquids and vapours. The study of the vapour compression cycle using ammonia, R12 and R22 refrigerants. Description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.

TP358  Reticulated Systems 1T
Designed to cover the principles of all services associated with the heating, ventilation, air-conditioning and refrigeration installations. Several field excursions are undertaken to provide the necessary introduction to each type of service.

TP380  Plant Services Drafting 3T
Layouts of the more complex systems associated with mechanical services are developed in this subject. A high standard of draftsmanship together with a meticulous attention to detail and appropriate degrees of accuracy is required of all students.

TP382  Plant Equipment 2T
The study of low velocity, high velocity, dual duct, and multi-zone air-conditioning systems, and associated equipment such as fans, housings, coils, ductwork, mixing boxes, registers, controls and piping.

TP418  Drainage Design
Development of skills in the drafting and design of sanitary drainage installation relating to sewerage regulations. Installation and connection requirements for special apparatus.

TP420  Plant and Equipment 1T (Plumbing) (1 unit)
Basic principles of the care and use of equipment, safety regulations and correct procedures.

TP421  Site Supervision and Organisation (Foremanship)
Dealing with the administrative and supervisory aspects of the foreman's work including powers and duties in a company, implications of contracts, human relations and problem-solving, project organisation, clerical recording and employment considerations.

TP426  Site Supervision (Plumbing)
Dealing with the administrative and supervisory aspects of the foreman's work, with particular reference to on-site construction projects.

TP427  Organisation (Plumbing)
Dealing with the administrative and supervisory aspects of the foreman's work, with particular reference to management with emphasis on human relations and head office organisation.

TP434  Gas Technology 2T (A) (Gas control techniques 1A and 1B)
The purpose and principles of control components applicable in fuel utilisation. Regulators, pressure control, volume control, flow control, temperature control, safety control. Applications of simple and complex control systems as applied to domestic, commercial or industrial gas utilisation. Particular reference to safety, fault finding and rectification.

TP435  Gas Technology 2T (B) (Gas control techniques 2A and 2B)
The principles and applications of combustion. Combustion systems, atmospheric and power mixers and burners, orifice sizing, port loading, flame stability and shape. Domestic, commercial and industrial uses. Appliance design, testing, safety control. Fuel comparison. Flues: principles, design. This subject to be a practical application of the principles covered in Gas Technology 2T (A).

TP448  Air-conditioning 2T
Methods of reducing noise and vibration from equipment and pipe work. Air-conditioning systems and arrangement of equipment. Duct design, external and internal heat loads. Moisture transfer. Air-cooling and spray equipment.

TP449  Refrigeration 2T
The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, capacity control, matching components in a VC system; absorption refrigeration and heat transfer. System faults in a simple VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

TP450  Instrumentation
Principles, construction and use and calibration of instruments used in the air-conditioning industry. These include the instruments used to measure temperatures, pressures, velocities, flow rates, speeds, fuel gases and electrical quantities.

TP451  Electrical and Controls
SI units, DC and AC supplies, single and three phase supplies, power factor, efficiency, power, motor starting, motors, safety and operating controls, wiring diagrams. Control terminology, two position control, floating control and modulating control, simple control systems, control diagrams.

TP452  Balancing and Commissioning
Principles and methods used to commission and balance air-conditioning systems. Use of instruments and report sheets. Basic computations. Practical balancing and commissioning in laboratory.

TP458  Reticulated Systems 2T
Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

TP480  Water Service Design
To develop skill in the design and drafting of water supply reticulation services, flushing services and fire services.

TP490  Installation of Solar Energy Systems
The theoretical and practical considerations and factors covering the installation of solar energy systems. Systems covered are thermal storage, domestic hot water, swimming pool heating, air heating and cooling.

TS320  Introduction to Insurance (1 unit)
Insurance concepts, history, world and Australian markets, departments within an organisation, categories of principles, types of insurance policies.
Carpentry and Joinery Modules

Module 1 (TB051): Simple base structures, basic tool skills.
Module 2 (TB052): Simple timber wall framing.
Module 3 (TB053): Simple timber roofing — skillion and gable.
Module 5 (TB055): Simple windows — casement frame and sash.
Module 6 (TB056): Timber fencing and gates.
Module 7 (TB057): Timber villa construction — sub-floor structure to include set wall plates.
Module 8 (TB058): Timber villa construction — wall framing.
Module 9 (TB059): Timber villa construction — ceiling and gable roof framing.
Module 10 (TB060): Timber villa construction — simple hip roofing.
Module 11 (TB061): Door and door frames (domestic).
Module 12 (TB062): Window joinery — double hung sash with patented balances rectangular louvre.
Module 13 (TB063): Window joinery — double hung sashes in box frame.
Module 16 (TB066): Hip and valley roofing.
Module A51/B51 (TB071): Hip and valley roofing 1 (equal pitch) Internal fixing.
Module A52/B52/TB072: Stair building 1.
Module A58 (TB076): Shoring, centres and levelling.
Module B52 (TB077): Formwork for concrete and systems.
Module B55 (TB078): Industrial roofing, trusses and ceilings.
Module B57 (TB079): Site work, setting out and levelling.
Module B58 (TB080): Large centres, shoring and trenched.
Module C52/D52 (TB081): Joinery 1 — doors, windows and louvres.
Module C58 (TB084): Stair building 3.

Plumbing and Gasfitting Modules

Phase 1:

Orientation: safety tools, materials and gauges, building terms.

Modules 1 to 12

Related instruction, trade drawing, geometry, developmental drawing and pattern cutting. Trade science — properties of materials, Action of water on materials, force, principle of moments, the pulley, capillarity, heat and temperature, ventilation, Calculations: arithmetic, mensuration use of formula, trade problems, Communication — reports, letter writing and telephone.


Trade practice: roof plumbing, Spouting Downpipes and roof gutters Copper tube — bending and jointing Mild steel sections Oxy-acetylene cutting and welding

Sheet lead: the working of collars

Sheet metal: jointing and fabricating models based on pattern cutting

Phase 2:

Modules 13 — A55

Trade theory: water supply for domestic services Head and pressure of water, storage tanks, defects in water services and industrial services, garden sprinkler systems, flushing systems, country water supply.


Trade practice: sheet lead: collars and external corners, welding, Copper tube-bending, jointing and fabrication. Plastics welding and fabrication of PVC and polythene welding — safe practice oxy-acetylene welding, and cutting flat-angle and pipe. Introduction to arc-welding.

Phase 3:

Modules A56 — A63

Trade theory — sanitary plumbing: multiple fixtures up to five storeys, sewerage pipe systems, fixtures for industrial and trade purposes, pipe-sizing and estimating.

Drainage: design and installation polluted areas. Septic tanks. Water supply, residential, industrial and special services. Pressurised services, Filtration and treatment of water, pumps and ejectors, flush valves. Hot water — residential and industrial services.

Gasfitting natural gas: planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas — single and two stage systems.


Modules Q51 — Q63

Heating: heating equipment, types, piping systems, water heating, Ventilating, air-conditioning and refrigerating: types of systems, equipment, temperatures.

Water supply: planning, storage, design, source of supply, pressure, special services.

Mild steel pipe, copper tube and plastics: bends and offsets, straight, angle and branch joints.

Mild steel sections: flat, angle and round, applications and welding.

Gasfitting — natural, LP blended: planning, pressure, principles and installation, conversion, safety.

Welding and cutting: oxy-acetylene, electric and argon — techniques.

Plumbing and Gasfitting 32CDA Syllabus

Modules 1-10

TP901 Basic skills: calculations, trade background, safety, welding, building construction, small diameter tubes and pipes, disposal systems, fixing devices, simple waste pipes, valves, sheetmetal.
TP902 Measuring and levelling, drain installation, trench shoring
TP903 Installation of sanitary fixtures and water supply
TP904 Installation and commissioning of gas appliances and water supply
TP905 Fixing of roofing materials: flashings, downpipes and rainwater products.
TP906 Installation of boiler, small bore heating, room air conditioners, ducting and pipe work and water supply.
TP907 Designing sewerage drains, plumbing systems, flushing systems. Principles of locating stoppages in drains, cutting branches, water supply.
TP908 (Interim Gasfitting) Planning and sizing, commercial and industrial requirements. Automatic controls, regulators. Liquid petroleum gas.

TP909 (Done at RMIT)

TP910 Installing plant room equipment and services Heating systems Ventilation and air-conditioning Miscellaneous systems Safety supply
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Business certificate courses

The following certificate courses are offered by the Business Studies Department.

Accounting
Office and Secretarial Studies
Personnel
Production
Sales and Marketing
Supply
Work Study

The Accounting Certificate is offered on a full-time basis over two years. The Office and Secretarial Studies Certificate is a full-time one year course.

Students pursuing other certificate courses may attend for one full year in common subjects followed by two years part-time evening studies in specialised subjects.

All of the above courses with the exception of Office and Secretarial Studies are also offered on a part-time evening basis involving four to five years’ study.

Specialist areas

In addition to the above areas of study a wide range of specialist units may be incorporated by attending other technical colleges for a few subjects.

These include:
- Advertising
- Banking
- Book trade
- Building societies
- Credit management
- Customs procedures
- Hospital administration
- Insurance — general
- Insurance — life
- Law

Any students interested in these specialist areas should also enquire for advice regarding a plan of study.

Entrance requirements

The usual entrance requirement is a pass at Year 11, but mature-age students may be granted admission to the course without this qualification.

Career potential

The general aim of the course is to provide a variety of sub-professional courses which are designed to suit the needs of potential section or department supervisors, senior clerical staff, industrial supervisors, sales supervisors, account staff and other supporting staff with specialist areas of responsibility.

Membership of associations

These courses are recognised for the purpose of admission to membership of a number of professional institutes, these are listed under the individual courses.

Applications for exemptions

Certificate of Business Studies (CBS) units passed at other colleges

If a Victorian Certificate of Business Studies unit has been passed at an institution other than Swinburne it is not necessary to apply for an exemption. The unit will count towards a certificate regardless of where it was studied. When applying for your certificate simply provide the awarding college (where you passed the last unit) with result statements from the colleges where you studied the other units.

Subjects other than CBS units

(a) Where less than twelve units are applied for:

these are granted by Swinburne and the application forms are available from Student Administration. The Head of Business Studies Department should be consulted if the student requires advice.
Changes in course structures
The course structures listed below are those applicable in 1986. From time to time the Certificate of Business Studies course structures are changed by the committees responsible for design. Students must obtain a current course structure when they enrol. This should be kept so that units can be selected each year when re-enrolling. Students must follow a particular course structure to complete their certificate.

Practical experience
Students cannot be granted an exemption solely on the basis of practical experience.

Specialist units
Students will not be granted exemptions for all the specialist units in a particular course. They are required to pass at least two Certificate of Business Studies specialist units.

General rules for granting exemptions
(1) Credit will not be given for subjects which are below Australian university entrance standard, i.e. the equivalent of Higher School Certificate.
(2) Credit will be given only if there is a substantial overlap of topics, except where:
(a) A person has passed a general education subject and seeks exemption in an unrelated general education subject, e.g. HSC Politics would give an exemption in Australian Social Structures. No more than one of this type of exemption will be granted.
(b) There is an acceptable basis for study in an area of specialisation then exemptions may be granted for introductory specialist units even though the content of the alternative subject does not overlap.

Provision of additional information
If the alternative is not part of a well-known course such as HSC it may be necessary to provide details on the:
(a) subject matter covered by the syllabus;
(b) length of the course;
(c) assessment methods used.

Sighting of original documents
Photocopied documents supporting applications must be marked ‘original sighted’ by an officer of the College, therefore it is suggested that applications be submitted in person to Student Administration so that original documents are not left at Swinburne.

Early application
It is advisable to apply for exemptions as soon as possible after enrolling. This will allow you to select subjects at re-enrolment knowing exactly which units are needed to complete the course; it also avoids the problems caused by possible changes in the rules for granting exemptions.

Approval time
Applications are checked by heads of departments before being recommended to the Business Studies Division Board which meets monthly. Exemptions for Middle-level English and Business Mathematics must be recommended by the heads of Humanities and Mathematics and Science respectively. After approval, letters of notification are prepared and rechecked, therefore students should expect this process to take approximately two months.

Further information
Additional details about these certificate courses are available from:
Mr R.W. Conn
Head of the Business Studies Department
Telephone: 819 8165

If the course is altered, students may continue on their original course or elect to adopt a new course structure. The only acceptable course structures are, the one current in the year the student was first enrolled, or any subsequent structure. This rule ensures that students cannot be disadvantaged by structure changes.

No allowance will be made when awarding certificates for students who have not complied exactly with a prescribed course structure which was current during their enrolment.

General Certificate of Business Studies
A Certificate of Business Studies will be issued to any student who passes in at least 20 units or approved equivalents provided that these units include:
(1) A minimum of six units from Groups 1 and/or 3, including Communication Skills 1 and Communication Skills 2.
(2) A minimum of eight Group 2 units including at least four units from one specialisation chosen from Accounting, Personnel, Production, Sales and Marketing, Secretarial, Supply, Work Study, etc.
- e.g. Accounting 1, 2, 4, 5 from the Accounting specialisation.
- Production Techniques 1A, 1B, 2A, 2B from the Production specialisation.

Please note that if students wish their certificates to be labelled with a specialist area of study, they must pass the subjects of the approved course of study as detailed on the following pages.

Students cannot initially enrol for the General Certificate. The students’ first enrolment will be in a Specialist Certificate area and, if progress warrants it, students will then be allowed to transfer to the General Certificate.

Units of the Certificate of Business Studies are divided into three groups:

Group 1 Business orientation — general units common to all certificates, e.g. Behavioural Studies 1A, Business Mathematics 1A.

Group 2 Business practice — specialist units pertaining to individual courses, e.g. Personnel 1A for the Personnel Certificate.

Group 3 Middle-management practices, e.g. Middle-management Practices A.
A21DBA Certificate of Business Studies

— Accounting

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

1. support staff for professional officers and higher level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., assistant accountants.

2. smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH133 Communication Skills 1
TH134 Communication Skills 2
TS101 Accounting 1 (Bookkeeping)
TS102 Accounting 2 (Preparation of financial reports)
TS103 Accounting 3 (Accounting systems)
TS109 Introduction to Business Data Processing (two units)
TS204 Accounting 4 (Partnership and company accounting)
TS205 Accounting 5 (Financial management)

Plus five of the following units
TS210 Accounting 6 (Costing elements)
TS211 Accounting 7 (Costing systems)
TS212 Accounting 8 (Internal control and auditing)
TS213 Accounting 9 (Budgeting procedures)
TS214 Accounting 10 (Accounting theory)
TS215 Accounting 11 (Introduction to taxation)
TS216 Accounting 12 (Income tax law and practice)
TS217 Accounting 13 (Government finance and accounting part 1)
TS218 Accounting 14 (Government finance and accounting part 2)

Any of the above units not already selected.

Two elective units
Any other Certificate of Business Studies units except some units offered by other colleges but not offered by Swinburne.

Duration of course
This course is offered on either a two-year full-time or a four-year part-time basis.

Membership of associations
Students completing the course are academically qualified for admission as members of the Institute of Affiliate Accountants. Those who complete the course including Accounting 11 and Accounting 12 are academically qualified for registration as tax agents.

A21DDS Office and Secretarial Studies Certificate

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

1. support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., personnel officers.

2. smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level including English, or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course details
Compulsory units
TH133 Communication Skills 1
TH134 Communication Skills 2
TS800 Practical Placement
TS820 Office Computer Applications
TS865 Administrative Procedures (2 unit value)
TS866 Typing Production 1 (2 unit value)
TS861 Typing Production 2 (2 unit value)
TS862 Transcription Skills
TS883 Word Processing 1
TS884 Word Processing 2

Students studying for the Office and Secretarial Studies Certificate have the option of selecting two specialist units from the following areas.

Duration of course
This course is offered on a one year full-time basis only.

A21DGA Certificate of Business Studies

— Office

This course was withdrawn from the Victorian Certificate of Business Studies curriculum effective from 1 January 1984.
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**A21DCA Certificate of Business Studies — Sales and Marketing**

**Career potential**
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

1. support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. production officers.
2. smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

**Prerequisites**
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

**Compulsory units**
- TH123 Communication Skills 1
- TH124 Communication Skills 2
- TM110 Business Mathematics 1A
- TM111 Business Mathematics 1B
- TS128 Industry and Society
- TS129 Introduction to Business/Service Organisations
- TS150 Production Techniques 1A
- TS151 Production Techniques 1B
- TS170 Supply Procedures 1A
- TS171 Supply Procedures 1B
- TS215 Behavioural Studies 1A
- TS216 Behavioural Studies 1B
- TS250 Production Techniques 2A
- TS251 Production Techniques 2B
- TS270 Supply Procedures 2A
- TS271 Supply Procedures 2B

Two elective units
- Any Certificate of Business Studies units not already selected.

Two elective units
- Any Certificate of Business Studies units not already selected.

**Duration of course**
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

**Membership of associations**
Students completing the course are academically qualified for admission as Associate members of the Institute of Management.

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**A21DCA Certificate of Business Studies — Production**

**Career potential**
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:

1. support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g. production officers.
2. smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

**Prerequisites**
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

**Compulsory units**
- TH123 Communication Skills 1
- TH124 Communication Skills 2
- TM110 Business Mathematics 1A
- TM111 Business Mathematics 1B
- TS128 Industry and Society
- TS129 Introduction to Business/Service Organisations
- TS150 Production Techniques 1A
- TS151 Production Techniques 1B
- TS170 Supply Procedures 1A
- TS171 Supply Procedures 1B
- TS215 Behavioural Studies 1A
- TS216 Behavioural Studies 1B
- TS250 Production Techniques 2A
- TS251 Production Techniques 2B
- TS270 Supply Procedures 2A
- TS271 Supply Procedures 2B

Four elective units
- Any Certificate of Business Studies units not already selected.

**Duration of course**
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

**Membership of associations**
Students completing the course are academically qualified for admission as Associate members of the Institute of Management.
A21DFC Certificate of Business Studies — Supply

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:
(1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., purchasing and supply officers.
(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course details
Compulsory units
TH133 Communication Skills 1
TH134 Communication Skills 2
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS129 Introduction to Business/Service Organisations
TS170 Supply Procedures 1A
TS171 Supply Procedures 2B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B
TS270 Supply Procedures 2A
TS271 Supply Procedures 2B

Plus one of the following units
TS321 Middle-management Practices 1 (Planning and control)
TS322 Middle-management Practices 2 (Leadership and human resource utilisation)

Plus four of the following units
TS101 Accounting 1 (Bookkeeping)
TS120 Introduction to Business/Data Processing (2 units)
TS150 Production Techniques 1A
TS151 Production Techniques 1B
TS206 Accounting 6 (Costing elements)
TS207 Accounting 7 (Costing systems)

Other Customs, Materials and Hospital units not available at Swinburne can be included in this category.

Four elective units
Any of the units above not already selected. Any other approved Business Studies units.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed on a full-time basis with the second half of the course on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Associate members of the Institute of Purchasing and Supply Management.

A21DFF Certificate of Business Studies — Work Study

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed to educate:
(1) support staff for professional officers and higher-level management, including department supervisors, senior clerical staff and staff with important specialist areas of responsibility, e.g., work study practitioners.
(2) smaller operators who need to be proficient in a variety of technical or business tasks as well as management decision-making.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Year 11 level or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TF101 Work Study 1 (Methodstudy)
TF102 Work Study 2 (Implementation)
TF103 Work Study 3 (Timedstudy)
TF104 Work Study 4 (Predicted motion time standards)
TF105 Work Study 5 (Estimating and statistical techniques)
TF106 Work Study 6 (Financial analysis and labour control)
TF107 Work Study 7 (Ergonomic and work environment design)
TF108 Work Study 8 (Network analysis)
TF286 Work Methods Improvement 2C
TF287 Work Methods Improvement 2D
TF382 Work Measurement 3 (2 units)
TH133 Communication Skills 1
TH134 Communication Skills 2
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS129 Introduction to Business/Service Organisations

Plus three elective units
One Group 1 or Group 3 unit not listed above and two other Certificate of Business Studies units not listed above.

Duration of course
This course is offered on a part-time evening studies basis or the first half of the course can be completed in one year on a full-time basis with the second half on a part-time evening basis.

Membership of associations
Students completing the course are academically qualified for admission as Licentiate members of the Institute of Industrial Engineers.

HSC Evening Classes
The following subjects are taught by the Business Studies Department:
Accounting (TS901)
Economics (TS902)
Legal Studies (TS903)

For a complete description of all HSC subjects, see end of General Studies section.
Business subject details

Accounting (TS009) Tertiary Orientation Program subject
Full year accounting course for students with limited or no prior knowledge of bookkeeping or accounting.

Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures; accounting for multiple ownership and analysis and interpretation of final reports.

Accounting 1 (TS101) (1 unit)
Bookkeeping. Forms of business ownership and types of business and non-business enterprises. Accounting conventions. Recording of business records and basic business documents to maintain records.
Complete manual bookkeeping process for sole trader service and trading businesses (using physical inventory method only), including bank reconciliation statements, imprest petty cash system, and subsidiary ledgers for debtors and creditors.

Accounting 2 (TS102) (1 unit)
Preparation of financial reports. Summary of entire bookkeeping process for both a service and trading organisation. Final accounting reports for a sole proprietor, using a single entry system of bookkeeping, in both a trading and service organisation. Preparation of a balance sheet from final balance with adjustments, showing the cost of raw materials, work in progress and stock, inventory of finished goods, and the calculation of profit or loss.

Accounting 3 (TS103) (1 unit)
Accounting systems. Relevance of and necessity for flow charting and coding of data within accounting systems. Essential features of equipment used to maintain systems using either manual, semi-automatic or electronic equipment. Essential features of controls and recording for the following systems using either manual, semi-automatic or electronic equipment, i.e. stock, payroll, debtors, creditors, cash receipts and payments, petty cash system, and subsidiary ledgers. In this unit, the perpetual inventory system and the use of control accounts and subsidiary ledgers for stock, debtors, creditors and fixed assets, are considered in detail.

Accounting 4 (TS204) (1 unit)
Partnership and company accounting. Essential differences between partnerships and company forms of business ownership. Reasons for converting an existing business into a partnership or company. Formation of partnerships and companies and basic contents of documentation involved. Journal and general ledger entries for the formation of a partnership and the admission of a partner to an existing business. Journal and general ledger entries in a company's books for: the formation of a company, the issue of shares to the public by a public company, the acquisition of the assets and liabilities of another business and the settlement of the purchase consideration with the previous proprietor(s). Statutory and other registers and records relating to the shares of a company. Profit distribution for partnerships and companies including the following topics. Profit and loss appropriation statement and a balance sheet of a partnership. Legal basis for statutory reporting, preparation of a profit and loss statement (including appropriation of a profit) and a balance sheet for a company in accordance with the Ninth Schedule of the Companies Act and professional standards.

Accounting 5 (TS205) (1 unit)
Financial management. Parties interested in the analysis and interpretation of accounting reports, their main areas of interest and the information normally available to each party. Nature and purpose of funds statements. Fund statements for sole traders, partnerships and companies. Analysis of the financial structure of a business using balance sheets, income statements, cash flow statements, and other relevant documents. Preparation of financial statements for sole traders, partnerships and companies.

Accounting 6 (TS206) (1 unit)
Costing elements. Detailed coverage of job cost systems. Introduction to cost accounting including position of cost department in organisation structure, cost terminology, manufacturing statements. Control procedures and documents for materials and labour. Accounting for material and labour using separate financial and factor ledgers. Factory overhead control, departmental overhead budgets and pre-determined overhead rates. Accounting for overhead costs. Overview of complete job cost system.

Accounting 7 (TS207) (1 unit)

Accounting 8 (TS208) (1 unit)

Accounting 9 (TS209) (1 unit)
Budgeting procedures. Preparation of budgets for the annual profit plan. The course concentrates on operating and financial budgets for manufacturers but also deals with retail and service businesses. The control function of budgets is emphasised with the preparation of performance reports at all stages of the budgeting process.

Accounting 10 (TS210) (1 unit)
Accounting theory. The main object of this unit is to provide the student with an appreciation of the role of accounting in society: the history of accounting; professional accounting bodies; accounting postulates, principles, doctrines and conventions and accounting standards.
In addition the course involves the study of the problems associated with historical cost accounting, and a number of methods of accounting for changing price levels including current purchasing power accounting, current value accounting, relative price change accounting, and COCOA.
The unit also covers alternative accounting methods for leases, company taxation and intercorporate investments.

Accounting 11 (TS211) (1 unit)

Accounting 12 (TS212) (1 unit)
Income tax law and practice. Preparation of returns for sole traders, partnerships, companies, trusts and superannuation funds. Role of the tax agent, assessments, objections and appeals, tax planning. A pass in this unit will provide an academic qualification for registration as a tax agent.

Accounting 13 (TS213) (1 unit)
Government finance and accounting part 1. This unit is the first of two government accounting units which covers the history of general revenue collection; Commonwealth/State financial relations; the preparation, presentation and supporting documentation for the Government Master Budget; role and powers of the Auditor-General; the composition, powers, duties and procedures of the Public Accounts Committee and Executive Council; and financial control through accounting techniques, Audit Acts and Treasury regulations.

Accounting 14 (TS214) (1 unit)
Government finance and accounting part 2. Accounting for trading organisations and non-trade service organisations; the funds system of accounting; department budgets; principles of government accounting including sources of revenue, expenditure constraints, recording methods and documents; final reports for trading and non-trading public utilities and the statutory requirements for the reports.

Accounting For Managers (TS107)
This course is designed to enable students in other than financial courses to understand the purpose and operation of accounting systems. Understand the principles of financial management, apply techniques of financial analysis to basic business problems, to participate with professional accountants in planning and decision-making related to their area of responsibility.
Administrative Procedures (TS865) (2 units)
The purpose of this subject is to give the potential office worker an insight into the various facets of the office and the systems which determine the efficient flow of information.
Subject topics will be aimed at giving the student a core of skills most frequently carried out by all office support personnel.
The course will include the study of the work environment through industry visits, case studies and research. Students will be given the opportunity to practise skills learnt, such as:
- keeping class records;
- keeping personal records;
- organising and arranging industry visits, class functions and guest speakers;
- receiving and making telephone calls and operating switchboard equipment;
- researching material and presenting it to class.

Australian Social Structures (TS108) (2 units)
The general purpose of this course is to add to our understanding of the society in which we live. Special emphasis is placed upon the working environment. Areas of special study include: aborigines, unemployment, alternative living styles, the work ethic, organised labour, business attitudes and expectations, income distribution and the lucky country syndrome, world poverty, sexual culture, women in the workforce, job satisfaction.

Behavioural Studies 1A and 1B (TS215 and TS216) (1 unit)

Business Mathematics 1A (TM110) (1 unit)

Business Mathematics 1B (TM111) (1 unit)

Communication Skills 1 and 2 (TH133 and TH134) (1 unit each)
The general aim of this subject is to enable students to become more effective communicators within an Australian society by developing appropriate communication and interpersonal skills.

Data Processing 2 (TS220) (2 units)
Preparation of modern data processing systems, analysis of systems, and implementation of new systems.

Data Processing 3 (TS221) (2 units)
Programming, using COBOL language.

Economics (TS008) Tertiary Orientation Program subject Full year course for students with limited or no prior knowledge of economics. Topics covered include: scarcity and the problems of limited means, resource allocation and the price mechanism, aggregate economic behaviour, the role of government, trades and external policy, economic growth and welfare, income distribution and poverty.

Industrial Relations A (TS240) (1 unit)
The role and functions of the shop steward. Relationship between shop steward and union officials. The interrelationship between the shop steward and company personnel — supervisors, managers, etc. Employee and union-oriented rules (award, non-award; written, unwritten). Appreciation of written rules governing employee-management relations at work. Function of, and knowledge of, man management and union rules.

Industrial Relations B (TS241) (1 unit)
How awards are formulated and interpreted. Similarities and differences between collective bargaining, arbitration and conciliation. Intervention techniques prior to and during negotiations. Role of conciliation and arbitration commissioners Conciliation and Arbitration Act Structure and functions of State Wages Board. Functions of various employers organisations in the industrial relations area. Functions of government departments and the Acts they administer With regard to industrial relations.

Industrial Relations C (Personnel 2B) (TS231) (1 unit)
The structure and function of the Australian Trade Union Movement. Employer organisations and the Conciliation and Arbitration Commission, the functions of government departments related to industrial relations, study experiments to improve the industrial environment.

Industrial Relations 1A and 1B (TS452) (1 unit)
A study of interrelationships of management and the work force in the building industry.

Industry and Society (TS128) (1 unit)
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary Industry, consumerism, pricing, trade-unions, employer organisations, population growth, the environment, the influence of government on industry and society.

Introduction to Business Data Processing (TS120) (2 units)
Modern data processing techniques for the provision of information to management. Problems that exist in the operating of business systems, and methods to overcome these problems. How advanced business equipment operates. Data processing systems using manual, and fully automated procedures. The impact of computer technology on today's society. Program writing using a structured approach to solve simple business applications. Specific areas covered include the preparation of suitable documentation for programs, system flow charts, the application of appropriate input or output devices given particular problems and how they should be introduced. Where possible realistic business computer packages will be used by students.

Introduction to Business Service Organisations (TS129)
(Formerly Principles of Organisations) (1 unit)

Introduction to Business Data Processing (TS155) (2 units)
Modern data processing techniques for the provision of information to management. Problems that exist in the operating of business systems, and methods to overcome these problems. How advanced business equipment operates. Data processing systems using manual, and fully automated procedures. The impact of computer technology on today's society. Program writing using a structured approach to solve simple business applications. Specific areas covered include the preparation of suitable documentation for programs, system flow charts, the application of appropriate input or output devices given particular problems and how they should be introduced. Where possible realistic business computer packages will be used by students.

Introduction to Business/Service Organisations (TS129)
(Formerly Principles of Organisations) (1 unit)

Introduction to Economics 1A (TS238) (1 unit)

Introduction to Economics 1B (TS239) (1 unit)
Introduction to Law 1A (TS243) (1 unit)

Introduction to Law 1B (TS244) (1 unit)

Law of contract including, types of contracts, requirements for a valid contract, conditions under which contracts are voidable, remedies for breach of contract. Legal aspects of sole traders, partnerships and companies including rights and liabilities of owners, formation procedures, etc. Advantages and disadvantages of forms of ownership. Consumer protection including a study of the strengths and weaknesses of the Goods Act 1958 and Hire Purchase Act 1958. Cheques, their legal status and the effects of different types of crossings.

Legal Studies (TS006) Tertiary Orientation Program subject Full year course for students with limited or no prior knowledge of legal studies. This course is designed to assist students in understanding the operations of law in our society. It should equip students with an understanding of how law affects our everyday lives, with particular regard to the rights and safeguards it bestows and the obligations and limitations it imposes. Topics covered include: the need for law, the structure and development of the Australian Legal System, the law-making bodies and legal processes, crime and criminal sanctions, the Law of Torts, consumer protection and the form of business organisations.

Middle-management Practices 1 (Planning and control) (TS321)
The main aim of the unit is to enable students to carry out the tasks of planning, forecasting, setting objectives, formulating policies and procedures, as well as preparing programs and schedules and budgeting within a middle-management context. The topics include an overview of the functions of management and their integration. The planning process which includes setting organisational goals, long and short term planning, standing plans and single use plans. Forecasting techniques, techniques and dimensions. Construction of objectives in terms of
Office Practices 1B (TS118) (1 unit)


Middle-management Practices 2 (Leadership and human resource utilisation) (TS322)

The main aim of this unit is to enable the student to develop leadership skills and understand the various leadership styles and their application. Topics include the need for leadership, the effects of good and poor leadership and the functions of a leader. Motivation including the theories of Maslow and Herzberg. Principles of motivation, recognition, delegation, mutual interest, participation and communication. Job enrichment, behaviour of individuals and groups. Effective communications in business, why failures in communication occur. Relationship of communication to motivation. Aids and barriers to effective communication. Styles of leadership, autocratic and democratic, paternalistic and laissez-faire. McGregor's theory X and Y. Attitudes of each style of leadership, reactions of subordinates and effects on productivity. Use of committees, conditions necessary for successful operation. Conference leadership, presenting topics, conducting discussions, summarising the discussion. Manpower planning, objective setting, personnel inventories and forecasting needs. Coordination of recruitment, selection, training and development, appraisal, retirement, retraining. Training and development: induction general training programs, job rotation, internal and external training, training costs, evaluating organisation/organisational charts and job documentation. Departmental organisational analysis, job analysis, defining departmental functions, writing operating objectives. Corporate organisation structure and relationships. This includes use of functional authority. Centralised and decentralised decisions, matching authority and responsibility, chain of command and span of control, resolving conflict.

Marketing Principles 1 (TS227) (1 unit)
The meaning of marketing in our Australian society; marketing philosophies and organisation; the marketing environment; market research; segmentation of markets and consumer behaviour.

Marketing Principles 2 (TS228) (1 unit)
The planning of product, price and promotion strategies; development of the strategic plan; marketing decision-making and the social implications.

Middle-level English 1A (TH126) (1 unit)
This subject has been replaced by Communication Skills 1. See details under that title.

Middle-level English 1B (TH127) (1 unit)
This subject has been replaced by Communication Skills 2. See details under that title.

Office Computer Applications (TS820) (1 unit)
This subject aims to provide students with an appreciation of computer packages and programs in relation to business operations. Students are expected to be able to use computer packages and to gain an understanding of the potential and importance of computer systems in the business environment. In order to achieve these aims students will be introduced to data processing hardware and software, systems and sub-systems in the business world and the decision-making process needed to obtain information which suits the management structure of an organisation. It is necessary, therefore, in meeting industry needs that students gain "hands-on" experience in utilizing some common business systems, e.g., data base package, spread sheet, accounting package.

Office Practices 1A (TS117) (1 unit)
In this unit, the organisation principles required in an office are examined together with the changing role of the office supervisor, leadership style of supervisors, the motivation of office staff, evaluation and appraisal of office staff and the development of effective communication skills.
Topics studied include the nature of accounting, accounting reports for sole proprietors, forms of business ownership, accounting reports for companies, limitation of accounting reports, cash management, cost volume profit relationship and budgeting.

Production Techniques 1B (TS151) (1 unit)
Examination of various production control procedures, to outline the advantages of each, and to determine why and when they are used. The function and scope of the estimating department; various methods of estimating; use of associated estimating documents and the preparation of an estimate report; to prepare various schedules as required by management including rolling master schedules, production programs and machine load charts.

Production Techniques 2A (TS250) (1 unit)
More sophisticated examination of the production management roles in organisations, policies, forecasting, estimating and control to achieve economic operation of the company.

Production Techniques 2B (TS251) (1 unit)
This unit provides a background in production organisation and control systems. The main topics include: factory design and the layout of production plant and services; decision-making on automation and equipment selection; methods of materials handling; assurance of the original manufactured quality level in materials handling; evaluation of methods of production control and efficiency reporting. The use of group technology in the control process. Production scheduling; objectives, problems, strategies and solutions to problems. Various scheduling techniques including PERT and CPM; information systems including the design of documentation flows; the use of computer systems in production scheduling and control.

Promotional Techniques (TS262) (1 unit)
Examines the interaction of research, merchandising, advertising and packaging with promotion of a product or image. Students will be required to produce a sales promotion plan from a case study from consumer, industrial, or service industries. Topics covered include the application of market research in promotion, merchandising techniques in various types of organisations and situations, the use of advertising and how to evaluate the effectiveness of a promotional plan.

Sales Management 1 (TS260) (1 unit)
Sales management: responsibilities and duties of the sales manager; sales forecasting and budgets; marketing and sales territory organisation; sales force planning; merchandising and sales promotion.

Sales Management 2 (TS261) (1 unit)
Sales management: how to establish and manage a sales team; recruitment and selection; sales training; methods of control and motivation; sales appraisal systems and staff development.

Salesmanship (TS162) (2 units)
A course designed to identify and develop the quality and skills required to be a successful sales person. Emphasis is on practical skills and role-plays. Topics covered include: the role of the salesman, understanding buyer psychology, selling and merchandising techniques, time management and sales-planning, the production and conduct of a sales presentation. Students will be required to prepare and conduct a sales interview covering and demonstrating the following: the opening, the use of aids, selling and benefits, overcoming objections and closing the sale.

Shorthand (TS190) (Full year non-credit subject)
Development of knowledge and skill in shorthand (Pitman's) as a preparation for other secretarial subjects to be taken later.

Shorthand Theory (TS890) (1 unit)
This subject is being offered for students who wish to pursue careers as stenographers and senior secretarial/personal assistants. A shorthand system will be studied with the aim that students will be able to transcribe shorthand notes fluently and accurately from both speed and office style dictation. This subject will be assessed internally by a theory test and transcription of business matter of average difficulty from the 700 common words list, of one and a half minutes at 50 wpm with 95% accuracy. Stenography — externally set, internally marked 2 hour examination to include office style dictation.

Shorthand Speed Development (TS891) (1 unit)
This subject is aimed at further developing the skills learnt in Shorthand Theory. Assessment consists of two components:
- Speed test: a final examination to be externally set and marked — 3 minutes at 80 wpm with 95% accuracy.
- Stenography — externally set, internally marked 2 hour examination to include office style dictation.

Supply Procedures 1A (TS170) (1 unit)
Topics covered include: the supply organisation — its role, relationships and place within an organisation; supply personnel and systems and the implications of EDP, ethics, the law and the responsibility to local industries.

Supply Procedures 1B (TS171) (1 unit)
Topics covered include: materials standardisation and simplification, tender procedure, selection of suppliers, economic ordering quantities, negotiation control of goods, sales tax.

Supply Procedures 2A (TS270) (1 unit)
Topics covered include: import and export payment, insurance, tariffs, customs and government policy, purchasing and market research, network analysis, methods of obtaining goods and the evaluation of the different methods.

Supply Procedures 2B (TS271) (1 unit)
Topics covered include: project buying and construction jobs, value analysis, selection of capital equipment and application, transport, stores and warehouse planning, personnel, procedures and handling, packaging and containerisation, raw materials.

Training Manpower Planning (TS340) (1 unit)
Organisational planning, management by objectives, relationship of manpower planning to organisational plans, assessing the organisation's human resources, prediction of future manpower requirements, appraisal of management quality, analysing training needs and deficiencies, preparation of submission for training programs, systems approach to job analysis.

Training Techniques (TS341) (1 unit)
Characteristics of adults as learners, principles of learning, training aids, program summary and session plans, planning a training session, classification of training objectives, learner performance objectives, training methods, questioning skills, presentation of training session, dealing with problems arising in training session, need for evaluation trainer effectiveness, planning and implementing trainer evaluation.

Training Practices (TS342) (1 unit)
Courses in the effective management of resources for course design and presentation, reinforcement audio-visual operating skills, development and presentation of a training program, training administration, pre- and post-course testing, marketing of training services.

Transcription Skills (TS882) (1 unit)
Industry surveys have identified a shift in emphasis in skills towards greater use of office machinery, such as transcribing machines, as well as the need for traditional transcription skills. The purpose of this subject is to provide these skills which have been identified as part of the core required by support personnel. This subject aims to develop the skill of audio typing, and to develop the ability to spell, punctuate, capitalise, proofread, construct correct sentences, recognise and correct improper sentences, use appropriate vocabulary, listen and follow directions, take notes and compose correspondence.

Typewriting Production 1 (TS890) (2 units)
This subject, together with TS891, is a compulsory unit in the Office and Secretarial Practices Certificate. Students are expected to acquire vocationally skills and knowledge which will enable them to touch type at a speed of at least 25 wpm, produce typed tasks relevant to office work and be able to proofread and edit to a professional standard.

Typewriting Production 2 (TS881) (2 units)
A further development of the skills acquired in Typewriting Production 1 but with more emphasis placed on increased production rates. Students will be expected to reach a speed of 45 wpm and type office related tasks of more complexity with efficiency.

Word Processing 1 (TS883) (1 unit)
The aim of this unit is for students to gain hands on word processing experience. The theory component is 60%.
Students will be able to identify hardware and access software; create, retrieve and print documents, and respond to equipment prompts.
Final print instructions such as centring, underlining, bolding and justification can be programmed, and format changes and tabulation performed.
Editing of text (deleting, inserting and text move) will be demonstrated and applied to a range of tasks.
Deletion and duplication of documents from both hard disk and diskette is carried out, as well as storage of both.

Students will also acquire theoretical knowledge of care and handling of equipment and capabilities and limitations of word processors.

**Word Processing 2 (TS884) (1 unit)**
This unit carries on from Word Processing 1, building on the skills acquired.

Students will be working on multi-page documents, paginating and numbering, inserting headers and footers, using advanced editing techniques and for drawing into other documents.

Standard documents will be prepared where variables can be keyed in; in addition, global search and replace functions will be carried out and advanced tabulation methods used.

Text will be displayed on pre-printed stationary and advanced format changes processed.

Fault identification awareness and hardware maintenance, such as changing print wheels and ribbon cartridges, will be taught.

**Work Methods Improvements 2C and 2D (TF286 and TF287) (1 unit each)**

**Work Measurement 3 (TF382) (2 units)**
Wage payment plans. Labour budgets and controls. Complete techniques project.

**Work Study 1 — Method Study (TF101) (1 unit)**
This unit is concerned with productivity and the application of method study techniques to improve it. The main topics are: definition and measurement of productivity. Methods of improving productivity. Union versus management conflict over productivity issues. The benefits of productivity increases from employees. Companies and the community. Selecting and drawing method study. Cost benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Problems and precautions to management showing costs, sketches, phototypes and pilot runs.

**Work Study 2 — Implementation (TF102) (1 unit)**
This unit is concerned with the factors affecting the application of method study improvement. The main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment of alternative job methods. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict. Conciliation and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behaviour science, job enrichment and worker participation in relation to motivation. The implementation of new methods. Identifying training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

**Work Study 3 — Time Study (TF103) (1 unit)**
The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of training methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the snap back timing method with a decimal minute stop watch. Determining the absolute error per set as the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalised time calculations. Calculation of appropriate allowances for establishing standard time. Different types of allowances, including relaxation, contingency, policy and special. Establishing standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

**Work Study 4 — Predetermined Motion Time Standards (TF104) (1 unit)**
Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of MODAPTS. The elements of MODAPTS and their derivation from MTM elements. The concepts of low conscious and high conscious control, identifying distances used in MODAPTS. Using MODAPTS to establish standard times including the advantages and limitations of MODAPTS.

**Work Study 5 — Estimating and Statistical Techniques (TF105) (1 unit)**
The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows: activity sampling, including its statistical principles and uses, advantages and disadvantages, procedures for application, forms design, confidence and accuracy calculations, control charts, standards setting and production study. Group timing technique which includes relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculations for setting a standard time. Machine interference including the following topics: man and multi-machine workloads, cyclic and random interference, service time calculations, tables and forms, application of allowances, and activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator's qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

**Work Study 6 — Financial Analysis and Labour Control (TF106) (1 unit)**
This unit covers the following topics. The major components of a financial information system, data collection methods and types of reports. The need for financial information and how it is used. Analysis and interpretation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision-making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentive wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting of standards, recording of output and the labour control system. Designing a group incentive scheme. The measured day work system including a comparison with incentive plans, setting performance standards and appropriate labour control. Design of a labour cost analysis system.

**Work Study 7 — Ergonomics and Work Environment Design (TF107) (1 unit)**
The general purpose in this unit is to enable students to understand the man-machine work environment relationships, affecting human and equipment performance. The main topics are: ergonomics/human factors including human senses, the nature of ergonomics and the man-machine relationship. The design of machines, equipment and the workplace. The effects of noise, illumination, heating and ventilation and the Australian standards relating to these. The effects of fatigue and stress. Benefits of good housekeeping. Risks associated with pollutants, control methods and legislative requirements. Plant layout including history and types of plant layout, approaches to plant layout, drawing standards, systematic layout planning and checklists for standard layouts. Materials handling systems and the selection of suitable equipment.

**Work Study 8 — Network Analysis (TF108) (1 unit)**
This unit provides an understanding of the factors affecting project planning and enables the student to apply network analysis techniques to planning tasks. The topics include: a brief outline of the origins of the CPM/PERT technique, comparison of networks with conventional bar charts and the applicability of networks and bar charts, networking conventions and establishing logical relationships between activities. Preparation of networks for given projects. Forward and backward pass calculations and the identification of critical paths. Total, free and independent float. Designing a float table. Converting a network into a time-bar diagram. Resource allocation and the manipulation of float. The costing of projects including the increase of CPM/PERT activity direction and probability of achieving deadlines and cost estimates. PERT and its relationship to CPM. Applicability of PERT and an understanding of precedence diagrams.
Academic staff
Electrical and Electronics Technology courses
- Apprenticeship
  - ElectricalMechanics
- Certificate
  - Basic Electronics
  - Technician Certificates
  - IndustrialElectronics Stream
  - Electrical/Industrial Control Stream
- Post-trade Certificates
  - Industrial Electronics
  - Electrical/Industrial Control
- Certificates of Technology
  - Electrical
  - Electronic
- Cooperative Certificate of Technology
  - Electrical or Electronics
Subject details
Mechanical and Manufacturing Technology courses
- Apprenticeships
  - Fitting and Machining
  - Boilermaking and Structural Steel Fabrication
- Mechanical Technician Certificates
  - Fluid Power
  - Mechanical Drafting
  - Plant Maintenance
- Production Technician Certificate
- Certificates of Technology
  - Mechanical
  - MechanicalDesign Drafting
  - Production Work Study
  - ManufacturingEngineering
  - Production Tooling Design
  - Further Certificate of Technology
  - Quality Control
- Post-apprentice and special courses
  - Fitting and Machining (other than apprentices)
  - Toolmaking
  - Electric Welding
  - Electric Welding (special course)
  - Introduction to Welding
Subject details
General information
Swinburne TAFE information
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R.C. Chamberlain, DipMechEng, CertEng(Aero), TTTT

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Head
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F. Sansom, TTrlC
S.D. Scott-Branagan, TTrlC
R.S. Somerville, DipTT, TTrlC
A.J. Stapley, PhD, DipEd
B. Stevens, DipMechEng, MIEAust
P. Tomat, Cert(Toolmaking), CertPressToolmaking, DipTT, TTrlC

Electrical and Electronics Technology courses

The following courses are offered by the Electrical and Electronics Technology Department:

Apprenticeship course

E32ECG Electrical Mechanics
A one-year per week apprenticeship course of three years' duration designed to meet the requirements of the Industrial Training Commission of Victoria, the State Electricity Commission of Victoria and the Technical and Further Education (TAFE) Board of Victoria.

The course provides the necessary training to prepare an apprentice to pass electrical trade theory and practice at a level approved by the State Electricity Commission for issue of the relevant 'B' Grade or 'A' Grade licence.

Note:
1. Prerequisite: student must be employed as an apprentice.
2. Only persons licensed by the State Electricity Commission of Victoria may carry out electrical wiring work.

Certificate course

E42EC Basic Electronics Certificate
A basic vocational program incorporating the common core elements of Certificate of Technology — Electronics and the Technician Certificate — Electrical (Industrial Electronics Stream).

The program is designed to develop in students the range of skills and knowledge commonly required by all personnel in the various occupational classifications existing throughout the electronics and associated industries.

Technician Certificate courses

E34ECB Electrical — Industrial Electronics Stream
E34ECB Electrical — Electrical Industrial Control Stream

The electrical technician courses provide valuable training in specialised fields for apprentices and tradespersons who wish to further their studies.

Apprentices who are taking a technician course concurrently with their trade training may be required to attend evening classes in addition to daytime trade training. Exemptions are granted for relevant subjects at Year 11 level.

Tradespersons who undertake a technician course will be required to attend classes on two evenings per week unless exemptions are granted for relevant subjects passed at Year 11 level.

Post-trade Certificate courses

E33ECU Industrial Electronics Certificate
A certificate is issued to all students who successfully pass all subjects in the three years of the industrial electronics course. The industrial electronics course may be studied as part of an electrical technician course.

An electrical tradesperson can qualify for an electrical technician certificate by completing the outstanding subjects as listed under the electrical technician courses.

E33ECF Electrical Industrial Control Certificate
(formerly Electric Motor Control)
Provides electrical tradespersons, technicians and people employed in the electrical switchgear industry with the relevant knowledge to install and maintain sophisticated electric motor control equipment in industrial installations.

Subjects are normally available as evening classes or day classes.
Certificate of Technology courses

Certificate of Technology (COT) courses are designed to train engineering associates who are the immediate support staff for professional engineers in industry.

The course consists of a number of compulsory core subjects and a number of elective subjects to suit a student's needs or interests. Each subject is allocated a value in course units. The elective subjects cover specialist areas such as Digital Electronics, Microprocessors, and Electrical Design.

To complete a Certificate of Technology course successfully the candidate must complete a minimum of 30 subject units plus two years' relevant industrial experience.

The students could be involved in any of the following areas in their employment: design development, installation, commissioning, operations or maintenance of plant or equipment associated with the electrical and electronics industry.

The courses offered are:

E21ECD Certificate of Technology (Electrical)
E21ECA Cooperative Certificate of Technology (Electrical)
E21ECB Cooperative Certificate of Technology (Electronics)

Membership of associations
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Full-time study
These courses require two years' full-time attendance over a period of three years.

Part-time study
The courses extend over a minimum of four years part-time day release or evening attendance.

Cooperative study
A feature of Swinburne engineering courses is their three-year cooperative education format. In a cooperative course the student learns in both an academic and a work situation, where these two phases of learning are related in an overall plan.

The work experience is arranged by Swinburne and undertaken in two semesters, each of six months' duration, during the second and third years of the course. While working, the student is supervised both by the employer and a member of the Swinburne academic staff who acts as the student's industrial tutor. Satisfactory completion of each work experience period is a prerequisite for admission to the next academic stage of the course.

Entrance requirements
Students must have Year 11 standard in:
- English
- Mathematics A
- Mathematics B

Physics or a satisfactory result in Technician Science (A) Technical Drawing (Graphics) for the Design Drafling course is not essential.

or approved equivalents — refer to head of the department.

Mature-age students without the above qualifications are invited to discuss this with the head of the department.

Exemptions
Should be referred to the head of the department with written evidence to support the claim.

Enquiries
Mr F.A. Gaunt, 819 8493.

Apprenticeship course

E32ECG Apprenticeship: Electrical Mechanics

Course structure

1st year
- TE001 Module 1 Electrical Wiring
- TE002 Module 2 Electrical Wiring
- TE003 Module 3 Electrical Wiring
- TE004 Module 4 Electrical Wiring
- TE005 Module 5 Electrical Wiring
- TE006 Module 6 Electrical Wiring
- TE007 Module 7 Electrical Fitting
- TE008 Module 8 Electrical Fitting

2nd year
- TE009 Module 9 Electrical Wiring
- TE010 Module 10 Electrical Wiring
- TE011 Module 11 Electrical Wiring
- TE012 Module 12 Electrical Wiring
- TE013 Module 13 Electrical Wiring
- TE014 Module 14 Electrical Wiring
- TE015 Module 15 Electrical Fitting
- TE016 Module 16 Electrical Fitting

3rd year
- TE017 Module 25 Electrical Wiring
- TE018 Module 26 Electrical Wiring
- TE019 Module 27 Electrical Wiring
- TE020 Module 28 Electrical Wiring
- TE021 Module 29 Electrical Wiring
- TE022 Module 30 Electrical Wiring
- TE023 Module 31 Electrical Wiring
- TE024 Module 32 Electrical Wiring

External examinations

(Education Department)

Subject examined
- TE301 Electrical Wiring Theory 3
- TE302 Electrical Wiring Practice 2
- TE401 Electrical Wiring Theory 4
- TE402 Electrical Wiring Practice 4

Equivalent
- 'B' Gr. Th.
- 'C' Gr. Pr.
- 'A' Gr. Th.
- 'A' Gr. Pr.

Note:
Before sitting for TE301 and/or TE302 Module 1 to Module 20 inclusive must have been passed.
Before sitting for TE401 and/or TE402 Module 1 to Module 24 inclusive must have been passed.

Certificate course

E42ECE Basic Electronics Certificate

The program leading to the award of Basic Electronics Certificate may be undertaken as:

(a) A terminal program in its own right;
(b) The initial common core portion of the Certificate of Technology — Electronics;
(c) The initial common core portion of the Industrial Electronics stream of the Technician Certificate — Electrical; or
(d) The initial common core portion of the Industrial Electronics Certificate.

At present, the above program is offered on a part-time basis only.

Part-time students will be able to complete the program through two years of part-time study either solely in the evenings or by a combination of day release and evening studies.

Course structure

- TE520 Basic DC Circuits
- TE521 Inductance and Inductors
- TE522 Capacitance and Capacitors
- TE523 Basic AC Circuits
- TE524 Semiconductor Fundamentals
- TE525 Amplifier Principles
- TE526 Amplifier Applications
Technician Certificate courses

**E34ECB Technician Certificate — Electrical (Industrial Electronics Stream)**

**Entrance standard**
These courses are available to apprentices who are prepared to undertake more study than is provided in the normal trade course. Students are usually required to complete English, Mathematics and Science at Year 11 technical level. Minimum entry is satisfactory pass in Year 10.

**Course structure**
Consists of a minimum of 50 units. The 24 modules of the apprentice course (Basic vocational) together with the 12 General Studies units are compulsory subjects. The remaining 14 units are Specialist elective subjects and may be chosen from the listing below with a minimum of 4 units at Level E.

**Compulsory core subjects (36 units)**

<table>
<thead>
<tr>
<th>Level A — General Studies</th>
<th>Level B — General Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM130 Mathematics1T</td>
<td>TM230 Mathematics2T</td>
</tr>
<tr>
<td>TM170 Science1T</td>
<td>TM270 Science2T</td>
</tr>
<tr>
<td>TH140 English1T</td>
<td>TH240 English2T</td>
</tr>
</tbody>
</table>

**Specialist elective subjects (14 units with a minimum of 4 units at Level E)**

**Level C**

<table>
<thead>
<tr>
<th>Basic Electronics Certificate — Part A</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>for subjects seeing under apprentice</td>
<td>4</td>
</tr>
<tr>
<td>certificate course)</td>
<td></td>
</tr>
<tr>
<td>TE150 Electrical Industrial Control</td>
<td>4</td>
</tr>
<tr>
<td>T</td>
<td></td>
</tr>
</tbody>
</table>

**Level D**

<table>
<thead>
<tr>
<th>Basic Electronics Certificate — Part B</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE440 Basic Programmable Controllers</td>
<td>1</td>
</tr>
<tr>
<td>TE650 Electronic Control Components</td>
<td>1</td>
</tr>
<tr>
<td>TE651 Electro-pneumatic/ Hydraulic Control</td>
<td>2</td>
</tr>
<tr>
<td>TE652 Generating Plant Control</td>
<td>2</td>
</tr>
</tbody>
</table>

**Level E** (minimum of 4 units)

| TE416 Microprocessors TA | 2 |
| TE417 Microprocessors TB | 2 |
| TE563 Electric Motor Speed Control | 2 |
| TE654 Advanced Programmable Controllers | 1 |
| TE655 Programmable Controller Applications | 1 |
| TE656 Crane and Conveyor Control | 2 |
| AC Electronic Motor Speed Control |   |
| DC Electronic Motor Speed Control |   |
| Eddy Current Electronic Speed Control | |
| Analogue and Digital Sensors |   |
| Closed Loop Control Principles |   |
| Amplifiers and Control Elements |   |
| AC-DC Power Supplies |   |
| Industrial Heating |   |
| Induction Heating |   |

Note: Unit value to be determined.

**Post-trade Certificate courses**

**E33ECU Industrial Electronics Certificate**

**Entrance standard**
Satisfactory completion of two years of an electrical trade course or an equivalent standard in any other approved course of study.

**Course structure**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2</td>
<td>E42ECE Basic Electronics Certificate</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>TE413 Industrial Electronics 3T (General)</td>
<td>4</td>
</tr>
<tr>
<td>or</td>
<td>TE415 Industrial Electronics 3T (Digital)</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: Microprocessor fundamentals

Students who have successfully completed TE415 (Digital), or E42ECE/BEC are eligible to enrol in the following:

| TE417 Microprocessors TB Semester 1 4 |
| TE417 Microprocessors TB Semester 2 4 |

**E33ECF Electrical Industrial Control Certificate**

(formerly Electric Motor Control)

**Entrance standard**
Satisfactory completion of two years of an electrical trade course or an equivalent standard in any other approved course of study.

**Course structure**

Consists of a minimum of 12 units — 4 units from Level C, 8 Units from Level D and E (with a minimum of 4 units from Level E).

<table>
<thead>
<tr>
<th>Level</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>TE150 Electrical Industrial Control 1T</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>TE440 Basic Programmable Controllers</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td>TE650 Electronic Control Components</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td>TE651 Electro-pneumatic/ Hydraulic Control</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>TE652 Generating Plant Control</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>TE653 Electric Motor Speed Control</td>
<td>2</td>
</tr>
<tr>
<td>or</td>
<td>TE654 Advanced Programmable Controllers</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td>TE655 Programmable Controller Applications</td>
<td>1</td>
</tr>
<tr>
<td>or</td>
<td>TE656 Crane and Conveyor Control</td>
<td>2</td>
</tr>
</tbody>
</table>

These subjects may be studied as post-trade subjects by any person in the electrical industry, or they may be studied as an integral part of the electrical technician course by apprentices and electrical trades personnel.

**Certificate of Technology courses**

**E21ECD Certificate of Technology — Electrical**

**Course structure**
Consists of a minimum of 30 units as detailed below, together with a total equivalent of two years of relevant industrial experience.

**Compulsory core subjects:**
17 units

**Specialist elective subjects:**
A minimum of 8 units at Level ‘C’ and/or ‘D’ including at least 4 units at Level ‘D’.

**General elective subjects:**
A maximum of 4 units.

**Compulsory core subjects (17 units)**

<table>
<thead>
<tr>
<th>Level A</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE110</td>
<td>Applied Electricity 1H</td>
</tr>
<tr>
<td>TE123</td>
<td>Electronics 1H</td>
</tr>
<tr>
<td>TE140</td>
<td>Electrical Drafting Principles 1H</td>
</tr>
<tr>
<td>TH115</td>
<td>TH116</td>
</tr>
<tr>
<td>TM123</td>
<td>Mathematics 1E</td>
</tr>
</tbody>
</table>
### Course structure

**Level B**
- Applied Electricity 2H
- Electronics 2H
- Mathematics 2E
- Electronics 2H
- Microprocessor Applications
- Digital Electronics 2H
- Pulse and Digital Electronics 1A
- Microprocessor Fundamentals
- Pulse and Digital Electronics 1H
- Communications Measurements 1H (A)
- Communications Techniques

**Level C**
- Electrical Machines 1H
- Specialist elective subjects
  - Applied Mechanics 1A and 1B
- Applied Mechanics 2A and 2B
- Electronics 3H
- Electrical Design 1H (Part A)
- Electrical Design 1H (Part B)
- Pulse and Digital Electronics 1H
- Microprocessor Fundamentals
- Digital Electronics 2H
- Electrical Drafting 2H
- Microprocessor Applications
- Electrical Measurements

**General elective subjects**
- Level A
  - Level A
  - Computer Studies 1H
  - Physics 1H
  - Social Science 1H
  - Communications Techniques 2
- Level B
  - Mathematics 3H
  - General elective subjects
  - Basic Electronics Certificate

**Specialist elective subjects**
- Level A
  - Applied Electricity 2H
  - Electronics 2H
  - Mathematics 2E
  - Electronics 2H
  - Microprocessor Fundamentals
  - Pulse and Digital Electronics 1A
  - Microprocessor Fundamentals
  - Pulse and Digital Electronics 1H
  - Communications Measurements 1H (A)
  - Communications Techniques

**Level C**
- Electrical Machines 1H
- Specialist elective subjects
  - Applied Mechanics 1A and 1B
- Applied Mechanics 2A and 2B
- Electronics 3H
- Electrical Design 1H (Part A)
- Electrical Design 1H (Part B)
- Pulse and Digital Electronics 1H
- Microprocessor Fundamentals
- Digital Electronics 2H
- Electrical Drafting 2H
- Microprocessor Applications
- Electrical Measurements

**General elective subjects**
- Level A
  - Level A
  - Computer Studies 1H
  - Physics 1H
  - Social Science 1H
  - Communications Techniques 2
- Level B
  - Mathematics 3H
  - General elective subjects
  - Basic Electronics Certificate

**1985 syllabus**

**Course structure**

**Compulsory core subjects**: Basic Electronics Certificate 42ECCE 8 units

**Other core subjects**: Electronics 1A 8 units

**Specialist elective subjects**: A minimum of 8 units at Level 'C' and/or 'D' including at least 4 units at Level 'D'.

**Compulsory core subjects (20 units)**

<table>
<thead>
<tr>
<th>Level A</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E42ECCE</td>
<td>Basic Electronics Certificate 8</td>
</tr>
<tr>
<td>THH16,</td>
<td>Communications Studies 1A, 1B 2</td>
</tr>
<tr>
<td>TM123,</td>
<td>Mathematics 1E 2</td>
</tr>
<tr>
<td>TE510,</td>
<td>Electronics 1B 3</td>
</tr>
<tr>
<td>TM223</td>
<td>Mathematics 2E 2</td>
</tr>
</tbody>
</table>

**Specialist elective subjects**

**Level A**
- Applied Electricity 2H
- Electronics 2H
- Mathematics 2E
- Electrical Machines 1H
- Specialist elective subjects
  - Applied Mechanics 1A and 1B
  - Applied Mechanics 2A and 2B
  - Electronics 3H
- General elective subjects

**Level B**
- Applied Electricity 2H
- Electronics 2H
- Mathematics 2E
- Electrical Machines 1H
- Specialist elective subjects
  - Applied Mechanics 1A and 1B
  - Applied Mechanics 2A and 2B
  - Electronics 3H
- General elective subjects
E21ECA  Cooperative Certificate of Technology — Electrical  
E21ECB  Cooperative Certificate of Technology — Electronics  

Course structure  
The academic portion of the cooperative certificate course is the same as the electrical or electronic courses but students must undertake electives as directed.  
The course structure is shown below:  

1 years full-time study  
6 months work experience  
6 months full-time study  
6 months work experience  
6 months full-time study  
1 years full-time study  
Certificate awarded

Swinburne Cooperative course  

The first year of full-time study includes the Basic Electronics Certificate.
Swinburne College of TAFE
Certificate of Technology courses — Electrical

Notes:
• C.O.T. also awarded if Microprocessor and Power stream completed
  □ Core subject
  () Unit value
  G General elective

LEVEL A

LEVEL B
Not more than 4 Units of General Electives

LEVEL C
Core Unit plus Min. of 4 Units Specialist Electives

LEVEL D
4 Units of Specialist Electives

2 YEARS
APPR/NWF
WORK
EXPERIENCE

Individual subjects have particular prerequisites

Electrical Design
(2)
Electrical Measurements
(2)
Electrical Machines
(2)
Electronics
3H
(2)

Pulse & Digital Electronics
(1)
Microprocessor Applications
(2)
Microprocessor Fundamentals
(2)

Physics
1H
(2)
G

Mathematics
1E
(2)

Comms Studies
(2)

Applied Mechanics
1A & 1B
(2)

Applied Mechanics
2A & 2B
(2)

Applied Electronics
2H
(2)

LJP/ZLI Electronics
1H
(2)

Electrical Drafting
1H
(2)

ADH/RSC Electrical
2H
(2)

Wiring and Assembly Methods 1
(2)

Mechanics
1H
(2)

Physics
1H
(2)

Mathematics
2E
(7)

Electronics
2H
(7)

Electricity
1H
(2)
Swinburne College of TAFE
Certificate of Technology courses — Electronics
1985 syllabus

Notes:
+ Subject to student numbers
Box Core subject
() Unit value
G General elective

B E C 8 core units
Subject details

'A' Grade Practice — Electrical Wiring Practical 4 (TE402)
Equivalent SEC ‘A’ Grade practice. This subject covers the practical content of electrical mechanics modules TE001 to TE024. Externally examined.

'A' Grade Theory — Electrical Wiring Theory 4 (TE401)
Equivalent SEC ‘A’ Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE024. Externally examined.

Advanced Programmable Controllers (TE441)
Programming NC contacts, data manipulation, Input device scheduling, report generation safety, design and editing of programs, control systems analysis, peripherals, analogue inputs and outputs, communication modes. A more detailed syllabus is available on request.

Applied Electricity 1H (TE110)
This course provide the fundamentals for subsequent studies in the certificate course of electrical design drafting and electrical power. The main areas of study are electrical fundamentals, network analysis, magnetism, instruments and measurements, electromagnetism, electrostatics, EMF sources and AC fundamentals.

Applied Electricity 2H (TE210)
Topics include AC fundamentals, complex notation, network theorems, resonance, circuit Q, polyphase systems, circuit transients, complex wave forms and harmonic analysis, AC meters.

'B' Grade Practice — Electrical Wiring Practical 2 and 3 (TE302)
Equivalent SEC ‘B’ Grade practices. This subject covers the practical content of electrical mechanics modules TE001 to TE020. Externally examined.

'B' Grade Theory — Electrical Wiring Theory 3 (TE301)
Equivalent SEC ‘B’ Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE020. Externally examined.

Basic Electronics Certificate (TE520-535)
Topics include basic DC circuits, conductors, insulators, voltmeter divider, constant current/voltage sources; inductance and inductors — magnetic flux/force, reluctance, permeability, inductance, basic AC circuits, capacitance and capacitors, semiconductor fundamentals, amplifier principles and application, timing and control devices, digital fundamentals/aplications, microprocessor control systems/industrial practices, transducers, basic PC board manufacturing methods, rectifiers. More details available on request.

Basic Programmable Controllers (TE440)
Types of control, programmable controllers block diagram scanning, programming including timers and counters, fault finding, safety.

Circuit Theory 1H (TE119)
The purpose of this course is to provide the background knowledge of electrical fundamentals necessary for subsequent studies in the certificate courses concerned. The main areas of study are: basic electrical fundamentals, network analysis, magnetism, instruments and measurements, electromagnetism, electrostatic, AC fundamentals and rotating machines.

Circuit Theory 2H (TE219)
A course of study in AC fundamentals. Topics include: basic AC fundamentals, series circuits, parallel circuits, resonance, AC network analysis, power transformers, polyphase systems, rotating machines and instruments.

Circuit Theory 3H (TE319)
Topics include transfer functions, Z, y and h parameters for two-port networks, coupled circuits, active filters — Butterworth, Tchebychev and Bessel and transmission line theory.

Communication Measurements 1H (TE420)
Practical meters, bridges, application of bridges, signal generators, cathode ray tube, cathode ray oscilloscope, time domain reflectometer, digital equipment, audio testing, group delay and system testing.

Communication Studies 1A, 1B (TH115, TH116)
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos and media analysis.

Communication Techniques (TE421)
Communication system, RF voltage amplifiers, RF oscillators, RF power ampls, modulation, demodulation, superheterodyne receivers, transmission lines, antennas.

Computer Studies 1H (TE235)
To enable the student to become competent in writing programs in BASIC or another high level language. To solve problems in the electrical/electronic areas, and know how to use resident complex programs in the computer’s library.

Crank and Conveyor Control (TE655)
Crank principles, motor types, directional control, speed control, braking, conveyor types, eddy current coupling, cascading, conveyor stopping devices, speed control, legal requirements, safety.

Digital Electronics 1H (TE236)
Digital electronics is a subject that has a theoretical and a practical base. The subject embraces topics such as: logic families, digital to analogue converters, analogue to digital converters, sequential logic control, synchronous and asynchronous counters, program logic controllers, memory devices such as ROMS PROMS, etc. Fast processing techniques such as ECL, Schotky TTL, etc. Digital systems such as UARTS, USARTS, keyboard encoders, etc.

Electrical Apparatus and Circuits (TE324)
Electrical components, DC and AC motor starters, automatic starters, speed control of motors, rectification, alarm systems, generating systems.

Electrical Design 1H (TE360)
Electrical contracting, electrical installations, lighting, electric motor selection, protection and control; estimating, projects.

Electrical Design 2H (TE460)
Elements of electrical design, conductors, insulation, magnetic circuits, elements of circuitry and systems.

Electrical Drafting 1T (TE227)
Standard symbols, switchboard layouts, electrical control gear, electric motors, dimensioning procedures.

Electrical Drafting 2T (TE325)
Pictorial sketching, circuit drawings (electrical and electronics), structures, installations, office practices.

Electrical Drafting 3T (TE425)
Advanced electrical and electronic circuit drawing, protective circuits, switchboard layouts, industrial installations, distribution.

Electrical Drafting Principles 1H (TE140)
The aim of the course is to provide an appreciation of drafting convention used in mechanical, electrical and civil engineering and to develop an ability to interpret drawings and extract information from them.

Electrical Drafting 2H (TE233)
Types of electrical diagrams and drawings, electrical drafting symbols, presentation of circuit diagrams, drawing office practices, typical electrical drawings.

Electrical Industries Control 1T (TE150)
Study of component parts, full and reduced voltage starting, control of a wound rotor motor, braking, control circuit reading and design, safety.

Electrical Machines 1H (TE310)
Topics include machine operational principles, rotating machines, winding currents and EMFs, transformers, three-phase induction machines — starting, speed control, braking, single-phase motors, synchronous machines.

Electrical Measurements (TE419)
This subject is intended to provide the students with fundamental knowledge regarding the principles of electrical measurement and of the instruments used and their limitations and accuracy. Topics include standards, errors, analogue meters, digital meters, waveform errors, resistance measurement, AC bridge measurements, interference and screening, temperature measurements, inductance and capacitance measurement, cathode ray oscilloscope, magnetic measurements, instrument transformers, power circuit measurements, oscillographs, instrument selection and specification.

Electrical Wiring Practical 2 and 3 (TE302)
Equivalent SEC ‘B’ Grade practice. This subject covers the practical content of electrical mechanics modules TE001 to TE020. Externally examined.
Mathematics 2E (TM223)
Five hours per week over one semester or two hours per week over two semesters, both day and evening.
Prerequisites: Mathematics 1E, or qualifications deemed equivalent by the Head of Department, Mathematics/Science.
Assessment: classwork (thirty per cent) and one final examination (seventy percent).
An extension of Mathematics 1E (TM123). The topics include complex numbers, limits, differentiation and applications, integration and applications, differential equations, Boolean algebra.

References
Supplied notes.

Mathematics 1T (TM130)
Two hours per week, day or evening, full-year.
Prerequisites: Year 10 mathematics or equivalent and adult entry.
Assessment: periodic tests and assignments and a final three-hour examination in November.
This course teaches basic mathematics of algebra and trigonometry and assumes very limited pre-entry knowledge of those areas. Topics covered are fundamental operation of arithmetic and algebra, transpositions, graphs, trigonometry, factorisation, solution equations both linear and quadratic and logarithms.

References
Supplied notes.

Computer Applications (TE438)
This course teaches student about the basic component software available in the market today. The topics covered are: organisation of computers, memory types, memory organisation, MPU, operation of MPU with memory, addressing modes, instruction set, binary arithmetic, status register, programming techniques, minimal systems, interrupts, stacks, subroutines, PIA, ACIA, timing, DMA, programming aids, diagnostics.

References
Supplied notes.
Students enrolled TM230 usually study Science 2T (TM270) concurrently, the two subjects being time-tabled in a four-hour block.

Microprocessor Fundamentals (TE338)
The aim of the course is to provide a wide knowledge of microprocessors available in the market today. The topics covered are: organisation of computers, memory types, memory organisation, MPU, operation of MPU with memory, addressing modes, instruction set, binary arithmetic, status register, programming techniques, minimal systems, interrupts, stacks, subroutines, PIA, ACIA, timing, DMA, programming aids, diagnostics.

Microprocessors ITA (TE416)
Architecture, addressing modes, instructions, data sheets, basic processor system, address maps, fault-finding, write and run programs using cross assembler, trouble shooting techniques.

Microprocessors ITB (TE417)
Keyboards, serial input/output, counter/timer, DMA techniques, floppy disks, audio cassette interface, microcomputer systems with emphasis on peripherals.

Module 1 (TE001)
Basic electronics theory, electrical materials, cables, basic installations, flexible cords, fuses, EMF.

Module 2 (TE002)
Current flow, standard symbols, circuits, effects of current flow, impedance, Ohm’s law.
Module 3 (TE003)
- Series resistance, voltage drop, parallel resistance, parallel currents, loop-in wiring system, series/parallel circuits, multi-way lighting circuits, master switching, three heat switching.

Module 4 (TE004)
- Power and energy, resistivity, voltage drop in cables, temperature co-efficient of resistance.

Module 5 (TE005)
- Magnets, magnetic materials, electro-magnetism, hysteresis
- Electro-magnetic induction, Faraday’s law, Lenz’s law, mutual induction, inductive reactance, induced EMF, generation of an EMF, simple alternator, commutation, simple DC generator.

Module 7 (TE007)
- Safety principles, hand tools, power tools, measuring and testing tools, shaping and fitting tools.

Module 8 (TE008)
- Centre lathe, cutting fields, lathe-work operations, screw threads, soft soldering, hard soldering.

Module 9 (TE009)
- Moving coil instruments, voltmeter, ammeter, shunts and multipliers, wattmeter, milliammeter, megger, moving iron instruments.

Module 10 (TE010)
- Primary cells, secondary cells, electro-statics, capacitors, capacitive reactance.

Module 11 (TE011)
- Power distribution systems, earthing methods, design and layout of switchboards.

Module 12 (TE012)
- Insulation resistance and continuity testing of installations, apparatus, regulations and requirements of the tests: cables, MIMS, practical wiring.

Module 13 (TE013)
- Illumination, fluorescent lamp circuits, electric heating, heat control, power and energy — calculations, wiring hazards.

Module 14 (TE014)
- DC machines, DC generators, series, shunt, compound, interpoles, efficiency, DC motors, series, shunt, compound, torque, speed control, starting reversal.

Module 15 (TE015)
- Properties of materials, ferrous and non-ferrous, resistors, alloys, joining materials, abrasive wheels, plastics, properties and uses.

Module 16 (TE016)
- Machining, lathe operations, identification, safety, mounting, alignment, bending, fabrication.

Module C51 (TE017)
- AC theory, RL and C in AC circuit impedance, single-phase power, power factor, power factor correction.

Module C52 (TE018)
- Series RL and C parallel RL and C designing electrical installations, tariffs, switchboards, earthing, testing, licensing.

Module C53 (TE019)
- Transformers, auto-transformers cooling, instrument transformers, voltage bucking and boosting.

Module C54 (TE020)
- Single phase motors, series universal, split phase, shaded pole motors, repulsion and repulsion-induction motors.

Module C55 (TE021)
- Three-phase alternator, star-delta connections, three-phase power, power measurement methods, three-phase power factor, three-phase four-wire system, three-phase switchboards.

Module C56 (TE022)
- Three-phase transformers, loading, interconnections, volt drop in a three-phase circuit, calculation of maximum demand in a three-phase installation.

Module C57 (TE023)
- Polyphase motors, 6kV speed three-phase motor starters, synchronous motors protective devices, calculations of operating conditions.

Module C58 (TE024)
- Rectification AC to DC, applications for current control, SCR, DIAC, TRIAC, illumination, mercury vapour lamp, metal halide lamp, fluorescent lamp, sodium vapour lamp, neon lighting comparison of types, need for power factor improvement.

Motor Speed Control (TE653)
- DC control, 5-phase rotor control, pole changing, static frequency converter.

Physics 1H (TM160)
- Consists of seven compulsory units — systems of units, vectors, kinematics, dynamics 1, work power and energy, thermodynamics, electrostatics and two elective units selected from DC circuitry theory, electromagnetism, dynamics 11, light and acoustics, fluid mechanics, statics.

Power Systems (TE410)
- This subject introduces concepts of generation, transmission, distribution, stability, fault calculations and protections schemes for electrical power systems.

Programmable Controller Applications (TE654)
- Programming NC contacts, data manipulation, input device scheduling, report generation safety, design and editing of programs, control systems analysis, peripherals, analogue inputs and outputs, communication modes.

A more detailed syllabus is available on request.

Pulse and Digital Electronics 1A (TE337)
- This subject gives a broad knowledge in the pulse techniques used in the interface of electronic circuits. Topics include compensated voltage dividers, low pass and high pass passive filters, clipping, clamping, transistor switching, pulse devices.

Science 1T (TM170)
- Two hours per week, day or evening over two semesters.

Prerequisites: Year 10 science or equivalent and adult entry.

Assessment: periodic tests and assignments and a final three-hour examination in November.

The course is aimed at teaching basic physics in SI units, vectors, equilibrium, kinematics, Newton’s three laws of motions, work, power, and energy, heat, Ohm’s law, and basic electric circuits.

References
- Supplied notes.
- Students enrolled in TM170 usually study Mathematics 1T (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

Science 2T (TM270)
- Two hours per week, evening over two semesters.

Prerequisites: Science 2T, adult entry, or qualifications deemed equivalent by the Head of Department, Mathematics/Science.

Assessment: class work (forty per cent) and one final examination (sixty per cent).

An extension of Science 1T, the topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, notational kinematics, notational dynamics.

References
- Supplementary notes.
- Students enrolled in TM270 usually study Mathematics 2T (TM230) concurrently, the two subjects being time-tabled in a four-hour block.

Supervision (Electrical) (TE506)
- Basically industrial supervision, but is strongly related to the contracting industry. Many students take both electrical contracting and estimating and supervision as a unit. Analysis of supervision and supervisor, organization, human relations, company policies, rating and classification, job instruction, group influences, control, safety, employee direction, incentives, social and recreational, standardisation.

Group discussion on each subject is important and is employed through-out.
Mechanical and Manufacturing Technology courses

The following courses are offered by the Department of Mechanical and Manufacturing Technology:

Apprenticeship courses

Part-time day apprenticeship courses in:

- Fitting and Machining
- Boilermaking and Structural Steel Fabrication

Both courses are structured according to the requirements of the Industrial Training Commission of Victoria.

Technician courses

Mechanical

Mechanical courses are divided into 3 streams:

- Fluid Power
- Mechanical Drafting and Plant Maintenance

Production

This course has a set of core subjects and a selection of specialist elective subjects.

These courses provide training in the mechanical and production fields. Several courses are available within each field, and they provide valuable training for apprentices and tradespersons who wish to further their studies.

Apprentices, who are taking a technician course concurrently with their trade training, will be required to attend evening classes in addition to daytime trade training. Tradespersons who undertake a technician course will be required, as a general rule, to attend classes on two evenings per week. Some subjects are available in the day-time for students who can arrange release from work.

The usual duration of a technician course is four years.

Certificate of Technology courses

Mechanical

Courses are based on a core of basic mechanical subjects and elective streams in Applied Mechanics, Installation and Maintenance, Fluid Power and Building Mechanical Services. These streams provide for the needs of aides to professional mechanical engineers.

Design Drafting

Mechanical

Students who are employed or seeking employment in drawing offices and possess the necessary qualifications may enter this course.

Production

Three certificates are available in the field of production engineering. Tooling design, manufacturing and work study, are areas covered in these courses.

Further Certificate of Technology course

Quality Control

A part-time course for those employed in and/or seeking a qualification in quality control.

Post-apprentice and special courses

Fitting and Machining

This is an evening course in basic machine shop practice to provide engineering draftsmen, tradesperson's assistants and others with the opportunity to complement their own areas of occupation.

It also provides younger students seeking apprenticeships, with an insight into the type of work they would be engaged in.

Toolmaking (Certificate)

Toolmaking is a post-apprenticeship (fitting and machining) course designed to provide advanced training for tradespersons. Classes are available during day and evening.

This course involves three years' study and includes practical training in jig boring, tool and gauge manufacture and thread grinding. A certificate is awarded on completion of the course.

Welding

The welding courses cover the syllabus prescribed by the TAFE Board to give instruction in all branches of electric arc welding. With a pass mark of sixty-five per cent in both theory and practice, a certificate from the Ministry of Employment and Training (Technical Services Branch) for the welding of pressure vessels may be obtained by the applicant, subject to satisfactory evidence of suitable industrial experience.

Courses incorporate

Welding of ferrous and non-ferrous metals, flame cutting and gouging, all-positional welding of plate pipe, rolled and hollow steel section, use of all types of electrodes, weld testing. For arc welding, courses are available for instruction in pressure pipe and stainless steel pressure plate to DL1 standards. The welding section of this department is an approved school of instruction in welding of all phases for the purpose of welding certificates to AS1796.

Courses include

Oxy-acetylene cutting, welding of cast irons, all-positional welding, flame gouging — hand and machine, template work, marking and cutting of pipe and pipe templates, welding of non-ferrous metals, safety precautions, general information as required by a welder.

Day classes in welding are conducted as required for degree students, technicians and second-year metal fabrication apprentices.

Enquiries: 819 8529

Apprenticeship courses

M32EFF Apprenticeship, Fitting and Machining

General

A part-time day course of three years' duration, or an accelerated course of sixteen hours per week first year and eight hours per week second year, designed to meet the requirements of the Industrial Training Commission of Victoria.

To qualify for the certificate of proficiency, an apprentice must attain the standard shown below:

Fitting and machining: a pass in basic modules 1 to 20 and any four alternative modules.

Course structure

Modular training

A module consists of the theory and practice together with the related knowledge required to perform a specified group of trade skills.

Eight hours each week for three years or sixteen hours per week first year and eight hours per week second year.

Course details

<table>
<thead>
<tr>
<th>Modules</th>
<th>Course Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF001 TF015</td>
<td>Modules 1-15 — Theory, Practice and Related Studies</td>
</tr>
<tr>
<td>TF016</td>
<td>Module 16 — Heat Treatment</td>
</tr>
<tr>
<td>TF017 TF019</td>
<td>Modules 17-19 — Theory, Practice and Related Studies</td>
</tr>
<tr>
<td>TF020</td>
<td>Module 20 — Revision and Craft exam</td>
</tr>
<tr>
<td>TF021</td>
<td>Module A51 — General Fitting</td>
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<tr>
<td>TF022</td>
<td>Module A52 — General Fitting</td>
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<td>TF023</td>
<td>Module A53 — General Fitting</td>
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<td>TF024</td>
<td>Module A54 — General Fitting</td>
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<td>TF025</td>
<td>Module A55 — Welding</td>
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<td>TF026</td>
<td>Module A56 — Welding</td>
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<td>TF027</td>
<td>Module A57 — Welding</td>
</tr>
<tr>
<td>TF028</td>
<td>Module A58 — Welding</td>
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<td>TF029</td>
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<td>TF030</td>
<td>Module A60 — Welding</td>
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<td>TF031</td>
<td>Module A61 — Welding</td>
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<tr>
<td>TF045</td>
<td>Module F51 — Tool and Gauge Making</td>
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<td>TF046</td>
<td>Module F52 — Tool and Gauge Making</td>
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<td>TF047</td>
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<td>TF048</td>
<td>Module F54 — Tool and Gauge Making</td>
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<td>TF053</td>
<td>Module H51 — Tool and Gauge Making</td>
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<td>TF054</td>
<td>Module H52 — Tool and Gauge Making</td>
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<tr>
<td>TF055</td>
<td>Module H53 — Tool and Gauge Making</td>
</tr>
<tr>
<td>TF056</td>
<td>Module H54 — Tool and Gauge Making</td>
</tr>
</tbody>
</table>

Swinburne College of TAFE
M32EJB  Boilermaking and Structural Steel Fabrication

General
This course is designed to train apprentices in the many practical skills required to carry out their trade.

Course structure
The complete course consists of 3 years of schooling. The course is studied on a modular basis, each module dealing with a particular skill together with the necessary Theory and Developmental Drawing.

Course detail

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF601</td>
<td>Module 1 — Theory and Practice</td>
<td></td>
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<tr>
<td>TF602</td>
<td>Module 2 — Theory and Practice</td>
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<td>TF603</td>
<td>Module 3 — Theory and Practice</td>
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<td>Module 5 — Theory and Practice</td>
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<td>TF606</td>
<td>Module 6 — Theory and Practice</td>
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<tr>
<td>TF607</td>
<td>Module 7 — Related Instruction</td>
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<tr>
<td>TF608</td>
<td>Module 8 — Related Instruction</td>
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<tr>
<td>TF609</td>
<td>Module 9 — Theory and Practice</td>
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<tr>
<td>TF610</td>
<td>Module 10 — Theory and Practice</td>
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<tr>
<td>TF611</td>
<td>Module 11 — Related Instruction</td>
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<td>TF612</td>
<td>Module 12 — Theory and Practice</td>
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<td>TF613</td>
<td>Module 13 — Theory and Practice</td>
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<td>TF614</td>
<td>Module 14 — Theory and Practice</td>
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<tr>
<td>TF615</td>
<td>Module 15 — Related Instruction</td>
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<tr>
<td>TF616</td>
<td>Module 16 — Related Instruction</td>
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<tr>
<td>TF617</td>
<td>Module 17 — Related Instruction</td>
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<tr>
<td>TF618</td>
<td>Module 18 — Related Instruction</td>
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<tr>
<td>TF619</td>
<td>Module 19 — Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF620</td>
<td>Module 20 — Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF621</td>
<td>Module 21 — General Fabrication</td>
<td></td>
</tr>
<tr>
<td>TF622</td>
<td>Module 22 — General Fabrication</td>
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<tr>
<td>TF623</td>
<td>Module 23 — General Fabrication</td>
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<tr>
<td>TF624</td>
<td>Module 24 — General Fabrication</td>
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<tr>
<td>TF650</td>
<td>Module 21A — Structural</td>
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</tr>
<tr>
<td>TF651</td>
<td>Module 22A — Structural</td>
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<tr>
<td>TF652</td>
<td>Module 23A — Structural</td>
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<tr>
<td>TF653</td>
<td>Module 24A — Structural</td>
<td></td>
</tr>
<tr>
<td>TF654</td>
<td>Module 21B — Pressure Vessel</td>
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<tr>
<td>TF655</td>
<td>Module 22B — Pressure Vessel</td>
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</tr>
<tr>
<td>TF656</td>
<td>Module 23B — Pressure Vessel</td>
<td></td>
</tr>
<tr>
<td>TF657</td>
<td>Module 24B — Pressure Vessel</td>
<td></td>
</tr>
</tbody>
</table>

**Technician courses**

Entrance standard
These courses are available to apprentices who are prepared to undertake more study than is provided in the apprenticeship course. Students are usually required to complete English, Mathematics, Science and Technician Drawing at Year 11 level at an early stage of the course. Minimum entry is satisfactory completion of a suitable Year 10 course.

Career potential
Technician courses are essentially extensions of apprenticeship training designed so that more able apprentices or tradespersons may undertake advanced trade training in order to equip themselves for positions such as detail draftspersons, technical assistants or to qualify for entrance to higher courses such as the Certificate of Technology.

Entrance requirements
To gain admission to a course an applicant must:
(a) be studying an apprenticeship course or be a qualified tradesperson;
(b) have approved prerequisite qualifications.

Minimum entry is satisfactory completion of a suitable Year 10 course and the technician course is designed to take four years on this basis. However, for students with a higher entry level and for apprentices released for additional hours by their employers this time is reduced.

**M34EEF  Mechanical Technician Certificate**

Career potential
Technician courses are essentially extensions of apprenticeship training designed so that more able apprentices or tradespersons may undertake advanced trade training in order to equip themselves for positions such as detail draftspersons, technical assistants or to qualify for entrance to higher courses such as the Certificate of Technology.

Entrance requirements
1. To have completed or be undertaking a fitting and machining apprenticeship course.
2. To have completed a satisfactory Year 10 course at secondary school. If higher studies have been completed, appropriate exemptions may be granted in Mathematics, Engineering Principles and Communication.

Course structure
In addition to the basic vocational (trade) program, students must complete a minimum of 26 units, comprising the common core subjects and the selected elective stream and elective subjects as required.

**Unit value**

<table>
<thead>
<tr>
<th>Common core subjects</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF10  Technician Communication 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF570/571 Engineering Computations 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF116  Engineering Principles (Technician) 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF206  Technician Drafting</td>
<td>2</td>
</tr>
<tr>
<td>TH210 Technician Communications 2A, 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF119  Engineering Materials (Technician) 1A, 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF570  Engineering Principles (Technician)</td>
<td>2</td>
</tr>
<tr>
<td>TF433  Basic Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TF433  Basic Supervision</td>
<td>15</td>
</tr>
</tbody>
</table>

**Elective streams**

A. Fluid Power

| Fluid Power 1                       | 2          |
| Fluid Power 2                       | 2          |
| Fluid Power 3                       | 2          |
| Fluid Power 4                       | 2          |

Plus elective(s) from the following list:

| TF243  Industrial Supervision          | 2          |
| TF232  Properties of Materials 1AD     | 1          |
| TF412  Thermodynamics & Heat Transfer 1AD | 1        |

B. Mechanical Drafting

| TF455  Introduction to Design and Drafting | 2          |
| TF315/316 Engineering Principles 1AD, 1BD | 3          |
| TF242  Mechanical Design & Drafting 1AD, 1BDK | 2          |
| TF232  Properties of Materials 1AD       | 1          |
| TF412  Thermodynamics & Heat Transfer 1AD | 1         |

Plus elective(s) from the following list:

| Fluid Power 1                       | 2          |
| Basic Programmable Controllers      | 1          |
| TF313/311 Engineering Materials & Processes 1AD, 1BD | 2         |
| TF242  Mechanical Design & Drafting 1AD, 1BDK | 2        |
| TF375  Fluid Machinery and Applications 1AD | 1        |
| TF351  CAD/CAM Basic                 | 1          |
| TF451  CAD/CAM Advanced              | 2          |
| TF235/236 Applied Mechanics 1AD, 1BD | 2          |

C. Plant Maintenance

| Industrial Maintenance 1             | 3          |
| Industrial Maintenance 2             | 3          |
| Principles of Plant Maintenance      | 2          |

Plus electives from the following list:

| Stem Plant (Heat Transfer) 1A, 1B | 2          |
| Pumps and Systems 1A, 1B          | 2          |
| Compressors and Systems 1A, 1B    | 2          |
| Basic Programmable Controllers    | 1          |
| Fluid Power 1                      | 2          |
| Fluid Power 2                      | 2          |
M34EFA Production Technician Certificate

Career potential
Technician courses are extensions of apprenticeship training which qualify apprentices or tradespersons for positions as supervisors, inspectors, technical assistants, detail draftspersons and similar occupations.

This certificate is the minimum qualification necessary for tradespersons who wish to enter the Education Department as trade teachers.

The first six (6) subjects may also be used as entrance qualifications to a Certificate of Technology.

**Entrance requirements**
1. To have completed or be undertaking a fitting and machining apprenticeship course.
2. To have completed a satisfactory Year 10 course at secondary school. If higher studies have been completed, appropriate exemptions may be granted in Mathematics, Engineering Principles and Communication.

**Course structure for students with approved Year 10 English, Mathematics, Science:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Unit value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TF570/571</td>
<td>Engineering Computations 1A, 1B</td>
</tr>
<tr>
<td>1</td>
<td>TF116</td>
<td>Engineering Principles (Technician)</td>
</tr>
<tr>
<td>1</td>
<td>TH110</td>
<td>Technician Communications 1</td>
</tr>
<tr>
<td>2</td>
<td>TF119</td>
<td>Engineering Materials</td>
</tr>
<tr>
<td>2</td>
<td>TH210</td>
<td>Technician Communications 2</td>
</tr>
<tr>
<td>2</td>
<td>TF126</td>
<td>Technician Drafting 1T</td>
</tr>
<tr>
<td>3</td>
<td>TF359</td>
<td>Jig and Tool Drafting 1T</td>
</tr>
<tr>
<td>3</td>
<td>TF318</td>
<td>Metrology 1T</td>
</tr>
<tr>
<td>3</td>
<td>TF417</td>
<td>Manufacturing Technology 1A and 1B</td>
</tr>
<tr>
<td>3</td>
<td>TS433</td>
<td>Basic Supervision</td>
</tr>
<tr>
<td>4</td>
<td>TF501</td>
<td>Toolmaking 1 Theory</td>
</tr>
<tr>
<td>4</td>
<td>TF502</td>
<td>Toolmaking 1 Practice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plus three approved electives:</td>
</tr>
</tbody>
</table>

**Electives**
- TF459 Jig and Tool Drafting 2T
- TF420 Metrology 2T
- TF101 Work Study 1
- TF102 Work Study 2
- TF370 Tooling and Inspection
- TF378 Fluid Power 1T
- TF120 Ergonomics
- TF230 Materials and Processes 1A
- TF330 Materials and Processes 2A
- TF503 Toolmaking 2 Theory
- TF504 Toolmaking 2 Practice
- TF518 Production Processes and Development 2T
- TH385 Communications for Supervisors

Note: The Technician Certificate is awarded on completion of thirty of the above units.

**Certificate of Technology courses**

M21EEA Certificate of Technology — Mechanical

Career potential
Graduates with a Certificate of Technology — Mechanical are employed as technical assistants, technical officers and works engineers. They are generally concerned with the maintenance of manufacturing equipment in order to maintain a smooth production flow, or with the development and manufacture of new ideas and products. Their field of application covers most industries including metal trades, clothing, food, mining and electrical.

**Entrance requirements**
The standard entry requirements for admission to the course are:
(a) Satisfactory completion of a Year 11 course, including passes in English, Mathematics, Science and Technical Drawing/Engineering Graphics, to a standard approved by the College.
(b) Experience and maturity, sufficient to undertake the course.

Note: As the entrance requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

**Course structure**
The course consists of thirty units taken from the areas below. Each area specifies the number of units to be taken. Each unit consists of two to three hours per week of study for a semester (three hours applies where practical work is involved).

**Membership of associations**
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

**Common core subjects**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Units</th>
<th>Hrs/wk</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF571 Engineering Computations 1B</td>
<td>1</td>
<td>2</td>
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<tr>
<td>TF315/316 Engineering Principles 1AD, 1BD</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF310/311 Engineering Materials and Processes 1AD, 1BD</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TH115/116 Communication Studies</td>
<td>2</td>
<td>2</td>
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<tr>
<td>TS453 Industrial Supervision</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF410 Electrical Machine Applications 1AD</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>TF232 Properties of Materials 1AD</td>
<td>1</td>
<td>1</td>
<td></td>
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<tr>
<td>TF130/131 Logic Approach to System Design 1AM, 1BM</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>TF375 Fluid Machine Applications 1AD</td>
<td>1</td>
<td>2</td>
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<tr>
<td>TF412 Thermodynamics and Heat Transfer 1AD</td>
<td>1</td>
<td>2</td>
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<tr>
<td>TF129 Costing and Estimating 1AM</td>
<td>1</td>
<td>2</td>
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<tr>
<td>TF561/562 Introduction to Design and Drafting 1ABD</td>
<td>2</td>
<td>3</td>
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<tr>
<td>TF241/242 Mechanical Design and Drafting 1ABDK</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Specialist area subjects**

1. Building and Mechanical Services
   - 1AD, 1BD 2 2
   - 2AD, 2BD 2 2
   - 3AD, 3BD 2 2
   - Total 8 8

2. Fluid Power 1A, 1B
   - Applied Fluid Power 1A, 1B 2 2
   - Fluid Power 2A, 2B 2 2
   - Total 8 8

3. Applied Mechanics 1AD, 1BD
   - Applied Mechanics 2AD, 2BD 2 2
   - Mechanical Design 2AD, 2BD 2 2
   - Total 8 8

4. Electrical Plant Operation 1A, 1B
   - Instrumentation and Controls 1A, 1B 2 2
   - Maintenance Management 1A, 1B 2 2
   - Plant Materials and Corrosion 1A, 1B 2 2
   - Total 8 8
Projects
Students must complete the project relevant to their elected stream satisfactorily before a certificate can be awarded.

<table>
<thead>
<tr>
<th>Unit</th>
<th>(7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF572</td>
<td>Applied Mechanics Project</td>
</tr>
<tr>
<td>TF573</td>
<td>Installation and Maintenance Project</td>
</tr>
</tbody>
</table>

M21ENA Certificate of Technology — Mechanical Design Drafting
(1981 syllabus)

Career potential
Graduates with a Mechanical Design Drafting Certificate are employed as draftspersons, technical assistants, technical officers and project engineers.

They work on the design of equipment for the many and varied fields of mechanical and production engineering.

These fields are diverse and include the aircraft and motor vehicle industries, food processing, clothing, footwear, air-conditioning, earth-moving and road construction equipment.

Entrance requirements
The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a Year 11 course, including passes in English, Mathematics, Science and Technical Drawings/Engineering Graphics to a standard approved by the College.

(b) Experience and maturity, sufficient to undertake the course.

Note:
As the entry requirements are flexible, prospective students who do not fit exactly into the categories as shown should not be deterred from applying.

Students should be prepared to devote four years of part-time study to complete the course, although it is possible to complete two years (stages) of part-time study in one year of full-time study.

Membership of associations
Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Engineering Associates.

Course structure

<table>
<thead>
<tr>
<th>Stage</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>TF455 Introduction to Design 1AD</td>
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<tr>
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<td>TF561 Introduction to Design and Drafting 1ABD</td>
<td>1</td>
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<tr>
<td></td>
<td>TF310 Engineering Materials and Processes 1AD</td>
<td>1</td>
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<tr>
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<td>TF311 Engineering Materials and Processes 1BD</td>
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<tr>
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<td>TF571 Engineering Computations 1B</td>
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<tr>
<td></td>
<td>TF319 Engineering Principles 1AD</td>
<td>1</td>
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<tr>
<td></td>
<td>TF316 Engineering Principles 1BD</td>
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<tr>
<td>Stage 2</td>
<td>TF453 Design for Economic Manufacture 1AD</td>
<td>1</td>
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<td></td>
<td>TF242 Mechanical Design and Drafting 1ABD</td>
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<td>TF225 Mechanical Design 1BD</td>
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<td>TF235 Applied Mechanics 1AD</td>
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<td>TF236 Applied Mechanics 1BD</td>
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<tr>
<td></td>
<td>TF232 Properties of Materials 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF410 Electrical Machines and Applications 1AD</td>
<td>1</td>
</tr>
<tr>
<td>Stage 3</td>
<td>TF454 Design for Economic Manufacture 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF468 Mechanical Design 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF469 Mechanical Design 2BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF375 Fluid Machinery and Applications 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF330 Applied Mechanics 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF332 Applied Mechanics 2BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF412 Thermodynamics and Heat Transfer 1AD</td>
<td>1</td>
</tr>
<tr>
<td>Stage 4</td>
<td>TF449 Design for Economic Manufactures 3AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF481 Mechanical Design 3AD</td>
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</tr>
<tr>
<td></td>
<td>Mechanical Design 3BD (Specialist Unit): Students to select one of:</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TF482 (a) Products and Mechanical Plant</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TF483 (b) Structures</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TF484 (c) Process Plant and Pipe Work</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

M21EFC Certificate of Technology — Production (Work Study)

Career potential
The work study certificate course is designed specifically to develop the special skills needed to become a work study officer.

Particular attention is given to work measurement, methods improvement, production planning, tooling and inspection methods; the ways and means of increasing manufacturing productivity, of making maximum use of staff and equipment, of guarding against accidents and observing the law of the land especially if the manufacturing process involves toxic materials, obnoxious effluents and other safety hazards. Some time is also devoted to behavioural sciences, communication and report writing, the basic principles of organisation, and on the business side of things, an introduction to economics and data processing. The certificate course has a bias towards engineering to meet the requirement of industry, but areas of special interest to the student can be incorporated. It is also considered to be a sound basis for more advanced courses leading to higher qualifications in several fields.

Entrance requirements
The standard entry requirements for admission to the course are:

(a) Satisfactory completion of a trade technical course.

(b) Satisfactory completion of an approved course at Year 11 level which has included English, Social Studies and Mathematics.

(c) Evidence of sufficient managerial potential to warrant undertaking further education.

Note:
Students should be prepared to devote four years of part-time study to complete the course.

Students completing the course are academically qualified for admission as graduate members of the Australian Institute of Industrial Engineers.

Course structure

The course consists of twenty-two core units, and a minimum of eight elective units of which four must be from engineering practice and related studies.

Core units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF570</td>
<td>Engineering Computations 1A 1B</td>
</tr>
<tr>
<td>TM160</td>
<td>Physics 1A and 1B</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication Studies 1A</td>
</tr>
<tr>
<td>TS215</td>
<td>Behavioural Studies 1A</td>
</tr>
<tr>
<td>TS216</td>
<td>Behavioural Studies 1B</td>
</tr>
<tr>
<td>TF101</td>
<td>Work Study 1</td>
</tr>
<tr>
<td>TF102</td>
<td>Work Study 2</td>
</tr>
<tr>
<td>TF103</td>
<td>Work Study 3</td>
</tr>
<tr>
<td>TF104</td>
<td>Work Study 4</td>
</tr>
<tr>
<td>TF370</td>
<td>Tooling and Inspection Methods</td>
</tr>
</tbody>
</table>

Elective units

Engineering practice and related studies

<table>
<thead>
<tr>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF200</td>
<td>Materials and Processes 1A</td>
</tr>
<tr>
<td>TF211</td>
<td>Applied Mechanics 1A and 1B</td>
</tr>
<tr>
<td>TF327</td>
<td>Applied Heat 1A and 1B</td>
</tr>
<tr>
<td>TF417</td>
<td>Manufacturing Technology 1A and 1B</td>
</tr>
<tr>
<td>TF211</td>
<td>Machine Shop Practice (Work Study)</td>
</tr>
<tr>
<td>TS128</td>
<td>Industry and Society</td>
</tr>
<tr>
<td>TS129</td>
<td>Introduction to Business/Service Organisations</td>
</tr>
<tr>
<td>TS238</td>
<td>Introduction to Economics 1A</td>
</tr>
</tbody>
</table>
M21 EFR Certificate of Technology — Manufacturing Engineering

Career potential
The Certificate of Technology — Manufacturing Engineering has been designed to provide Australian industry with the trained personnel it urgently needs — skilled technologists who have a considerable understanding of the latest manufacturing technologies, equipment and their applications to industry. This course is oriented basically towards the metal trades and related industries, where graduates will find employment.

Entrance requirements
The standard prerequisite qualifications for admission to this course are:

(a) Satisfactory completion of Year 11 at a Technical School with passes in English, Engineering Graphics and appropriate Mathematics and Science.

or

(b) Satisfactory completion of Year 11 at a High School with passes in English, Mathematics and Physics. Students should undertake Mechanical Drawing or Engineering Graphics bridging units as a preparation for Technician Drafting.

or

(c) Qualifications deemed by the TAFE Board to be equivalent to those in (a) and (b).

or

(d) Maturity and sufficient experience to enable a student to complete the course successfully.

Course structure
Core subjects

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF570/571 Engineering Computations 1A, 1B</td>
</tr>
<tr>
<td>TH151116 Communication Studies 1A and 1B</td>
</tr>
<tr>
<td>TF126 Technician Drafting</td>
</tr>
<tr>
<td>TF310/311 Engineering Materials and Processes</td>
</tr>
<tr>
<td>IAD and 1BD</td>
</tr>
<tr>
<td>TF399 Jig and Tool Drafting 1</td>
</tr>
<tr>
<td>TF318 Metallurgy 1T</td>
</tr>
<tr>
<td>TS443 Industrial Supervision</td>
</tr>
<tr>
<td>TF383 Modern Metal Cutting</td>
</tr>
<tr>
<td>TF391 Materials Handling 1B</td>
</tr>
<tr>
<td>TF351 Computer Aided Design/Computer Aided Manufacture — Basic</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF394 Specialised Machine Tools</td>
</tr>
<tr>
<td>TF312/313 Engineering Materials 2A and 2B</td>
</tr>
<tr>
<td>TF332/333 Engineering Processes 2A and 2B</td>
</tr>
<tr>
<td>TF901 Welding and Fabricating</td>
</tr>
<tr>
<td>TF451 Computer Aided Design/Computer Aided Manufacture — Advanced</td>
</tr>
<tr>
<td>TF452 Robotics</td>
</tr>
<tr>
<td>TF491 Materials Handling 2AB</td>
</tr>
<tr>
<td>TF462 Reliability and Prototype Testing</td>
</tr>
<tr>
<td>TF195/196 Organisation and Management for Quality</td>
</tr>
<tr>
<td>A and B</td>
</tr>
<tr>
<td>TF464 Product Liability and Product Recall Management</td>
</tr>
<tr>
<td>TF463 Quality Costs and Budgeting</td>
</tr>
<tr>
<td>TF411 Electrical Manufacturing Techniques</td>
</tr>
</tbody>
</table>

M21 EFB Certificate of Technology — Production (Tooling Design)

Career potential
The course has been designed to suit the requirement of industry in the areas of jig and tool design, press tool design and moulding tool design.

Tooling design covers a very broad range of skills, as illustrated by the breakdown into three specialist areas of study. The jig and tool designer is mainly concerned with the ‘making’ equipment used in mass production to improve the quality and accuracy of the article and at the same time improve the rate of production.

The press tool designer is concerned with the dies used to manufacture such diverse articles as body panels for cars, refrigerators, etc. or those required to stamp coins.

The moulding tool designer is concerned with the design of moulds used to manufacture anything from car and truck tyres, plastic body panels for electrical equipment such as drills for the handyman, right through to the moulding of nylon gears for slot cars.

Entrance requirements
Prerequisites for students entering the course are as follows:

(1) Standard prerequisite academic qualifications are passes in Year 11 English, General Mathematics (Technician) Technician Science A, Engineering Graphics (Unit 2) and Engineering Workshop Practice (Unit 2), or approved equivalent, or higher qualifications.

(2) To gain admission to the third and fourth years of the course an applicant must:

(a) have completed the first and second years of the course;

(b) be employed in a drawing office;

(c) have had satisfactory engineering workshop experience. This may be the completion of the workshop practice modules of the fitting and machining apprenticeship course, or completion of Machine Shop Practice 1H and 2H from the Higher Technician Certificate in Jig and Tool Design, or approved work-based training.

Where Principals vary the prerequisite academic qualifications, students admitted without having reached the required standard in Engineering Graphics or Workshop Practice, will be required to undertake a preliminary course of study in these subjects.

Course structure

<table>
<thead>
<tr>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF570/571 Engineering Computations 1A, 1B</td>
</tr>
<tr>
<td>TF123 Applied Mechanics 1P</td>
</tr>
<tr>
<td>TF154 Mechanical Drafting (Production)</td>
</tr>
<tr>
<td>TH115 Communication Studies 1A</td>
</tr>
<tr>
<td>TH116 Communication Studies 1B</td>
</tr>
<tr>
<td>TF120 Ergonomics</td>
</tr>
<tr>
<td>TF128 Machine Tools and Processes</td>
</tr>
<tr>
<td>TF218 Materials and Heat Treatment</td>
</tr>
<tr>
<td>TF291 Applied Mechanics 2P</td>
</tr>
<tr>
<td>TF355 Gauge Drafting</td>
</tr>
<tr>
<td>TF280 Jig and Tool Drafting</td>
</tr>
<tr>
<td>TF380 Jig and Fixture Drafting and Design 1</td>
</tr>
<tr>
<td>TF381 Metal Cutting 1</td>
</tr>
<tr>
<td>TF228 Advanced Machine Tools</td>
</tr>
</tbody>
</table>

Year 3
Select one of 3.1, 3.2, 3.3

3.1 Jig and Fixture

<table>
<thead>
<tr>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF380 Jig and Fixture Drafting and Design 1</td>
</tr>
<tr>
<td>TF381 Metal Cutting 1</td>
</tr>
<tr>
<td>TF228 Advanced Machine Tools</td>
</tr>
</tbody>
</table>
Post-apprentice and special courses

M42EFF Fitting and Machining—other than Apprentices

Career potential
This is an evening course in basic machine shop practice to provide engineering draftspersons and others working in allied trades with an opportunity to study subjects parallel with those covered during apprenticeship.

The course is undertaken on a part-time basis of at least five hours per week. Students proceed at their own pace to complete the nineteen basic modules and the module 20 craft examination and four alternative modules.

Entrance requirements
Applicants should have some work association with the fitting and machining trade and a genuine desire to become a skilled fitter and machinist.

Course structure
Modules 1-24 — See Machines and Materials subject details.

M33EFE Post-trade Certificate—Toolmaking

Career potential
Students who have already completed a fitting and machining apprenticeship course will develop a higher level of ability in the theory and practice of tools, gauges and development work, which will enable them to enter more highly skilled and lucrative positions such as foremen and leading hands in a very wide variety of manufacturing industries.

The tool and gauge making and press tool streams of the Toolmaking Certificate are of three years' duration and are available both day and evening, i.e., one half-day or two evenings per week.

Entrance requirements
Completion of a fitting and machining apprenticeship course in the basic twenty modules, plus four alternative modules from certain streams (G, H and I).

Course structure
Area of study
1st year
TF501 Toolmaking Theory 1
TF502 Toolmaking Practice 1

Unit 1
Principal and basic applications
Precision turning, precision boring, vertical spindle milling, precision grinding.

Unit 2
Associated studies, measurement and calculations
Micrometers and indicators, vernier instruments, application of toolmaking formulae, trigonometry, gauge blocks, measurement of angles, straightness and squareness testing, measurement by optical projection.

Unit 3
Workshop and laboratory activities
Turning operations, positioning of holes, milling operations, grinding operations.

2nd year
TF503 Toolmaking Theory 2
TF504 Toolmaking Practice 2

Unit 1
Relief turning, jig boring, thread grinding, form tools, milled type cutters, lapping, precision grinding.

Unit 2
Calculations, thread measurement, surface finish, measurement of taper and form gauges.

Unit 3
Releaved cutters, jig boring, thread gauges, form tools, taper reamer, taper gauges.
Electric Welding — Post-trade

General
The courses have been designed to meet the increasing demand for general instruction in welding processes. All courses cover both theory and practice.

To complete a course successfully, a student must obtain a pass in all grades of theory and practice and obtain at least fifty per cent of the marks allotted for each grade of welding.

Entrance requirements
There are no prerequisite qualifications for these courses. However, preference will be given to those students who are seeking welding qualifications in connection with their employment.

Certificates
The Victorian Department of Labour and Industry may grant Government Welding Certificates, in accordance with Australian Standard 1796-1975, to applicants who have obtained a minimum of sixty-five per cent of marks for both Theory and Practice in Grade III Electric Welding examinations. Documentary evidence, satisfactory to the examination authority, of acceptable training and/or industrial experience is necessary.

Course structure
Each course consists of three years part-time study. Both courses are run separately. Time allocations for both theory and practice in each course are identical.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF710 Electric Welding Theory 1</td>
<td>2</td>
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</tr>
<tr>
<td>TF711 Electric Welding Practice 1</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>TF610 Electric Welding Theory 2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF611 Electric Welding Practice 2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>TF910 Electric Welding Theory 3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TF911 Electric Welding Practice 3</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Boilermaking

Module 1 (TF601)
Introduction to the trade, lifting and lowering by hand, stacking of materials, correct identification and use of electrical switches, selection and method of slinging, crane hand signals.

Module 2 (TF602)
Calculation of circumferences and diameters of circles, marking out constructions, identification and use of fire extinguishers, oxyacetylene welding and cutting. Safety precautions for confined spaces, hazardous locations and containers.

Module 3 (TF603)

Module 4 (TF604)
Flame-cutting, bevelling and piercing by hand, flame-cutting various sections and welding preparations. Straight line flame-cutting machine, profile flame-cutting machine, flame-cutting processes, machines and applications.
Module 5 (TF605)
Protective clothing and accessories for electric welding. Selection of electrodes by classification, electric welding techniques and exercises. Electrical terms associated with MMA welding, types of welded joints, weld defects.

Module 6 (TF606)
General terms associated with gas welding and brazing. Types of joints, weld defects. Low temperature brazing, flat butt and corner gas welds. Flat brazing and brazing.

Module 7 (TF607)

Module 8 (TF608)
Exercises in surface development, views and projections symbols, representation of rolled steel sections, Methods and types of dimensions, dimension, cross section and symmetry lines. Welding symbols. Material list.

Module 9 (TF609)
Drilling, selection and use of portable grinders, dressing grinding wheels, distortion control, straightening by contra-heating.

Module 10 (TF610)
Flame-gouging, flame-cutting and piercing heavy plate, flame-cutting profile shapes, safety precautions when using compressed gases.

Module 11 (TF611)
Fabrication pressed channel, calculations, forming of cylinders and sections, hopper fabrication.

Module 12 (TF612)
Layout and fabrication of pipe handrail, fabrication of truss panel point, layout and fabrication of pressure pipe branch.

Module 13 (TF613)
Marking out cutting and fabrication of column, fabrication and assembly of taper flange beams.

Module 14 (TF614)
Characteristics of electric welding current, electrode selection and characteristics. Electric welding techniques, fillet, multipass, horizontal pad, butt, plate to sections.

Module 15 (TF615)
Gases for MIG and TIG welding. Arc welding techniques on MIG, TIG and submerged arc. MIG fillet and butt welds. TIG welding outside corner, submerged arc butt weld. Arc-gouging.

Module 16 (TF616)
Development of flat curved surfaces. Exercises in the development of oblique cylinder, pipe gusset, conical sections, offset hoppers, rectangular to round transition piece, lobster-back bend and pipe branch templates.

Module 17 (TF617)

Module 18 (TF618)
Heat treatment, heating and temperature measurement. Trade materials, properties and uses. Steels for pressure vessels and structural purposes.

Module 19 (TF619)

Module 20 (TF620)
Use of numerical control machines in the metal fabrication industry. High strength structural bolting. Fabrication of bolted splice joint.

Alternative Modules — General Fabrication

Module C21 (TF621)
Fabrication of two-flight right-hand conveyor screw. Layout, development and fabrication of 30° set-out pressure pipe branch offset.

Module C22 (TF622)
Module C23 (TF623) still in developmental stage

Module C24 (TF624)

CAD/CAM Basic (TF351)
Topics include: introduction to automation, the computer, the role of the computer in manufacturing, numerical control, robots, other applications. CAD/CAM Advanced (TF451)
Covers the topics included in CAD/CAM basic in more depth and detail.

Communication Studies 1A and 1B (TH115 and TH116)
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos and media analysis.

Communications for Supervisors (TH385)
This is an existing syllabus from the Business Studies Supervision Certificate. It helps to develop and extend knowledge and skills in communicating and to provide and reinforce appropriate communicating attitudes in a supervisor.

Computer Appreciation and Applications to Quality Control (TF253)
This subject provides an appreciation of the range of uses and methods of application of computers in quality control work, including concepts of computer, BASIC, FORTRAN and COBOL programming, micro-processors, computer graphics, use of computer packages in quality control.

Costing and Estimating 1AD (TF129)

Data Processing 1 (TS120)
Modern data processing techniques for the provision of Information to management. Problems that exist in the operations of business systems, and methods to overcome these problems. How advanced business equipment operates. Data processing systems using manual, semi-automated and fully automated procedures. Program writing to solve simple problems. Specific areas covered include the preparation of suitable documentation for programs, system flow charts, the selection of appropriate input or output devices to particular problems and how they should be introduced.

Design for Economic Manufacture 1AD (TF453)
Capabilities of workshop machine tools, forging, casting and fabrication, welding, metal cutting methods, design for testing, value analysis, value engineering, NC machines, cost effects of tolerances.

Design for Economic Manufacture 2AD (TF454)
Consideration of economic factors in plant construction, fabrication and manufacturing processes.

Design for Economic Manufacture 3AD (TF449)
Designs for 'life cycle costs' and quality control. Cost structures of typical business with batch sizing and economical order quantities.

Dimensional Metrology (TF317)
Precision measuring techniques and application of principles of measurement. Length, metrology (standards and gauges), flatness assessment, auto-collimator and alignment telescope, surface texture, roundness, squareness and parallelism, co-ordinate measurement.

Drafting Practice 1T (TF358)
Geometric constructions relative to the interpretation of pipes, and ducting. Construction of involutes, cycloids and loci of points of mechanisms. Detail drafting relative to dies, forgings and fabricated parts.

Drafting Practice 2T (TF456)

Electrical Drafting 1H (TE133)
The aim of the course is to provide an appreciation of drafting convention used in mechanical, electrical and civil engineering and to develop an ability to interpret drawings and extract information from them.

Electrical Drafting 2H (TE233)
Types of electrical diagrams and drawings, electrical drafting symbols, presentation of circuit diagrams, drawing office practices, typical electrical drawings.

Electrical Machine Applications 1AD (TE410)
Basic electrics, AC and DC generation, AC and DC motors, motor starting and protection, motor characteristics and selection.

Electrical Manufacturing Techniques (TF411)
This subject offers a general appraisal of electrical circuit diagrams and electrical control of pneumatic/hydraulic systems. It covers SAA symbols, identification and designation of components, printed circuit techniques, solenoid valves, control circuits and practical circuit examples.
Engineering Materials (TF119)
This syllabus is designed to give a basic knowledge of the properties and uses of common engineering materials, heat treatment, surface treatment, testing and corrosion. Practical work forms an important part of this program.

Engineering Materials and Processes 1AD and 1BD (TF310 and TF311)
A general appreciation of the following areas: properties of materials, characteristics of non-ferrous metals, plain carbon steels, alloying elements, cast iron, heat treatment, bearing materials, timber and concrete, use of machine tools, metal working processes, lubricants.

Engineering Materials 2A and 2B (TF312 and TF313)
A detailed study of plastics and steels in relation to properties, applications, chemical make-up and structure, testing methods. Non-ferrous metals are also studied in less detail, together with destructive and non-destructive testing.

Engineering Principles 1AD and 1BD (TF315 and TF316)
Study of moments, forces, friction, optics, linear and circular motion, energy, basic electronics and sound.

Engineering Principles (Technician) (TF116)
This syllabus is designed to broaden the students' understanding of how the laws of physics apply in practical engineering. Students should therefore be able to reason, solve problems, and suggest modifications to improve existing procedures.

Engineering Processes 2A and 2B (TF332 and TF333)
A general appraisal of processes of forming plastic products. Other topics include composite materials, adhesives, powder metalurgy, EDM, investment casting, chemical milling and creep feed, and abrasive belt grinding.

Ergonomics (TF120)
This is the same syllabus as is used in the Certificate of Technology — Production (Tooling Design). It gives students a basic understanding of what ergonomics is, and how it may be applied in all walks of life to improve efficiency and reduce fatigue and accidents.

Finishing Processes (TF352)
This unit is an introduction to the various types of finishing processes and the factors influencing the choice of coating and/or finish.

Fitting and Machining (Apprentices)
Module 1 (TF001)

Module 2 (TF002)
Lathe work. Safety. Operational planning.

Module 3 (TF003)

Module 4 (TF004)
Turning operations. Cutting fluids. Equipment used for setting up. Science and materials.

Module 5 (TF005)

Module 6 (TF006)
Turning operations. The shaping machine.

Module 7 (TF007)
Screw cutting. Grinding

Module 8 (TF008)

Module 9 (TF009)
Lathe operations, cemented carbide cutting tools, economical use of machine tools, indicators.

Module 10 (TF010)
Revision of addition, subtraction, multiplication and division of decimals, simple and compound ratios, economical use of machine tools, revolved and removed sections, dimensioning and tolerances, sketching, assembly and detail drawings. Bearing metals, copper and nickel alloys, joining of metals.

Module 11 (TF011)
Screw cutting, form turning. Turret and capstan lathes.

Fitting and Machining (Alternative Modules)

Construction Equipment (TF020)

Gear Cutting (TF045, TF046, TF047, TF048)

General Fitting (TF012)
Calculation of minor diameters, gear ratios, revision of trigonometry. Aligned and pictorial views, geometric tolerancing bearings, assembly and detail drawings, sketching. Systems of limits and fits, limit gauges, metric measurement.

Fitting and Machining (Alternative Modules)

Construction Equipment C51/C52/C53 (Industrial Hydraulics) (TF021, TF022, TF023)
Basic principles of hydraulics, a simple hydraulic system, pumps, directional control valves, actuators, pressure control, filters, seals, pipe lines, trouble-shooting, speed control, reservoirs, miscellaneous components, hydraulic fluids, transmissions, servo mechanisms and trouble-shooting of systems.

Compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance, standards, air gauging units and air lubrication of bearings.

Gear Cutting F51, F52, F53, F54 (TF045, TF046, TF047, TF048)

General Fitting A51/A52/A53 (Industrial Hydraulics) (TF021, TF022, TF023)
Basic principles of hydraulics, a simple hydraulic system, pumps, directional control valves, actuators, pressure control, filters, seals, pipe lines, trouble-shooting, speed control, reservoirs, miscellaneous components, hydraulic fluids, transmissions, servo mechanisms and trouble-shooting of systems.

General Fitting A54/A55 (Industrial Pneumatics) (TF024)
Compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance, standards, air gauging units and air lubrication of bearings.

General Fitting A56 (TF094)
Portable power tools, press fits, preparation for welding, plastics, adhesives and glues.

General Fitting A57 (TF095)
Installation of equipment, safety precautions, uses of plant equipment, testina of machines.

General Fitting A58 (TF096)
Power transmission, clutches, brakes, bearings. Special tools, prevention maintenance.
Tool and Gaugemaking H51, H52, H53, H54 (TF053, TF054, TF055, TF056)

Precision measurement — standards of accuracy, sources of error in workshop measurement, direct versus comparative measurement, gauging, measuring instruments, measuring with precision instruments. Helical milling, tool and cutter grinding. Explanations of toolroom functions, press tool-making, die-making for plastic and die casting, tool and gaugemaking.

Welding B51/B52/B53/B54 (Oxy-acetylene) (TF025, TF026, TF027, TF028)

Oxy-acetylene process, personal aspects, care of equipment, safety, pre-weld preparation, welding techniques, hard surfacing, welding of mild steel, welding of thermo-plastics, heat treatments, identification of metals, fusion welding of cast irons, bronze weldings, welding of aluminium.

Welding B55/B56/B58 (Electric arc welding) (TF029, TF030, TF032)

Electric arc process, safety, care of equipment, welding procedures, power sources, electrodes, fillet welding, types of welded joints. Faults, effects of heat, iron and steel welding, heat treatment resistance welding, welding testing, pre-heating and post-heating procedures.

Fitting and Machining (other than Apprentices)

Module 1 (TF001)
Theory and practice. Principles of marking out. Hand-tools, files and filing, measuring and testing tools, the lathe, lathe operations, planning.

Module 3 (TF003)
Theory and practice. Files and filing, chisels and chipping, screw threads, drills and drilling, turning operations, equipment used for setting up and holding plain work on machines, cutting fluids.

Module 5 (TF005)
Theory and practice. Files and filing, drills and drilling, turning operations, the shaping machine, machine cutting tools.

Module 7 (TF007)
Theory and practice. Files and filing, drilling, grinding practice, simple spring formation, the slitting machine and planning machine.

Module 9 (TF009)

Module 11 (TF011)
Theory and practice. Single start veve and square threads, form turning, turret and capstan lathe.

Module 13 (TF013)
Theory and practice. Accurate fitting and maintenance of pumps, clutches and bearings, checking a lathe for accuracy, marking out, scrapers and scraping, lubricants.

Module 15 (TF015)
Theory and practice. Milling operations, the milling machine indexing, tooth forms of milling cutters.

Module 17 (TF017)

Module 19 (TF019)
Theory and practice. Precision cylindrical grinding, surface grinding.

Module 20 (TF020)
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (three hours) and practical examination (five hours) of work covered in modules 1-19.

Modules 21-24 inclusive (TF021-TF024)
Four (4) alternative modules to be chosen from the following areas:

Fluid Machinery Applications 1AD (TF375)
Fluid mechanics, dynamics of fluids, venturi orifices and weirs.

Fluid Power 1T (TF379)
This is an established syllabus used in other courses. The emphasis is on the basic scientific principles that describe the behaviour of hydraulic and pneumatic components. Explanation and description of actual equipment performance is the core of this subject.

Fluid Power 2T (TF477)
Knowledge of hydraulic and pneumatic components is assumed. Emphasis of this course is on the analysis and design of power and logic circuits.

Heat Treatment (TF414) (special course)
Practical heat treatment involving selection of tool and die steels, carburising steels. Furnaces and furnace equipment. Temperature measurement and recording, quenchants, quenching methods. Heat treatment, operations of annealing, normalising, hardening and tempering, isothermal treatments, surface hardening treatments including carburising, carbonitriding, nitriding and induction heating. Metallography preparation of specimens, micro-examination of both unheat-treated and heat-treated steels. Hardness testing, mechanical testing of steels.

Human Factors (TF467)
A study of the relationship between human factors and quality control. Ergonomics, motivation programs, job design and job quality, planning for people.

Hydraulics and Pneumatics (TF485)
There are three main areas covered in these units: (i) terminology and graphic symbols, (ii) transmission mediums, and (iii) operating principles.

Industrial Supervision (TS453)
This subject covers the topics: job analysis and description, industrial relations, methods improvement, plant layout, estimating and planning, production control, materials handling and control, quality control, equipment and maintenance, factory records, personnel department, accident prevention program, first aid.

Industry and Society (TS129)
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary industry, consumerism, pricing, trade unions, employer organisations, population growth, the environment, the influence of government on industry and society.

Instrumentation H (TE338)
Extension of metrology and machine tools, where principles, construction, calibration and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional test of electronic equipment. Pneumatic circuit elements. Measurement of basic qualities, measuring circuits, read-out systems, automatic control, equipment evaluation, non-destructive testing methods.

Instrumentation 1T (TF339)
Extension of metrology and machine tools, where principles, construction, calibration and evaluation of more common instrumentation procedures are developed. Emphasis is placed on functional test of electronic equipment. Pneumatic circuit elements. Measurement of bias qualities, measuring circuits, read-out systems, automatic control, equipment evaluation, non-destructive testing methods.

Introduction to Business Service Organisations (TS129)
What is business? What does it do? Forms of ownership, non-profit organisations, internal organisation structure, functions of management, personal skills of managers, policy decision-making and documentation, general management tasks, basic business functions — financing, purchasing, staffing, production, sales and marketing; operating techniques and controls of above.

Introduction to Design 1AD (TF455)
Written and oral communication, job brief, design influencing factors, calculations from reference material and economics.

Introduction to Design and Drafting 1ABD (TF561)
Basic mechanisms and their application. Simple drafting techniques. Orthographic projection, sectioning and solid geometry. The drawing of standard components, together with tolerancing and surface texture.

Introduction to Economics 1A (TS238)

Introduction to Economics 1B (TS239)
Four out of the following six topics to be studied: economic role of government, economic measurement, economic systems, international trade, the financial market and the level of economic activity, the labour market.
Introduction to Law 1A (TS243) (1 unit)
History and development of Australian law and system of courts. The roles of court personnel. Acts of parliament, their purposes, procedures and interpretation. Case law and the doctrine of precedent. The application of the law, involving a detailed study of one or two areas such as negligence, absolute liability, Goods Act, consumer protection, Noise Pollution Act, Workers Compensation Act, Restrictive Trade Practices Act, legal concepts of property and types of law.

Introduction to Law 1B (TS244) (1 unit)
Law of contract, including types of contracts, requirements for a valid contract, conditions under which contracts are voidable, remedies for breach of contract. Legal aspects of sole traders, partnerships and companies including rights and liabilities of owners, formation procedures, etc. Advantages and disadvantages of forms of ownership. Consumer protection including a study of the strengths and weaknesses of the Goods Act and Hire Purchase Act. Cheques, their legal status and the effects of different types of crossings.

Jig and Tool Drafting 1T and 2T (TF359 and TF459)
Jig and Tool Drafting 1T covers the basic principles of location and clamping, guiding and location of cutting tools, and general jig and fixture construction. 2T is an elective which builds on the work done in 1T, and also includes the design features of cutting tools such as broaches, form tools, drills, reamers and press tools. A good proportion of the time in both 1T and 2T is spent in producing working drawings.

Jig and Tool Drafting 2H (TF260)
This subject covers basic jig and tool drawing and design procedures, but concentrates more on the design of cutting tools and gauges and gauging principles. Mechanical elements such as brakes and pneumatics as applied to tooling are also covered. Drawings and sketches are prepared on tracing paper and are drawn to AS1100 drawing standard.

Job Instruction and Presentation (TF385)
Introduction to training aids, methods and presentation examining questioning techniques, training situations and the evaluation of training.

Logic Approach to System Design 1AD (TF130 and TF131)
Programmable logic controllers and the use of logic diagrams in both system design and the trouble-shooting of systems. The Interface between hydraulic, pneumatic, electrical and electronic systems. The theory of process control. The reading of control and schematic diagrams.

Manufacturing Technology 1A and 1B (TF417)
The syllabus is intended to broaden the knowledge and understanding of the manufacturing processes. The subject covers metal cutting, efficiency and economics, various types of machines and methods associated with labour and batch production. The original syllabus is being updated to include an introduction to numerical control.

Manufacturing Technology 2A and 2B (TF450)
Premium Module Shop 1H and 2H, Fitting and Machining 5 or Toolmaking 1 and Manufacturing Technology 1A and 1B, or approved electives. A more theoretical approach to the machining of materials, forming processes, plastic, precision casting, modern processes; laser beam machining, electron beam welding, numerical control of machine tools.

Materials and Processes 1A (TF230)

Materials and Processes 2A (TF330)

Materials Handling 1B (TF391)
The acts and regulations governing materials-handling equipment, types and functions of various materials-handling equipment and plant layout and flow patterns.

Materials Handling 2AB (TF491)
Contains material related to manufacturing, warehousing and distribution of products and materials, selection to equipment, packaging and unit loads, transport systems, acts and regulations and involves preparing a detailed specification and tender for materials-handling equipment and installation.

Mechanical Design 1A and 1B (TF458)

Mechanical Design 1BD (TF225)
Bearings, belt drives, chain drives, clutches, brackets, riveted joints, modes of failure, bolts and locking devices, welded joints, frames, beam deflection, machine frames, pipe and pipe design, technical report writing, meeting procedure, hydraulic fluid power systems, ergonomics, safety, lifting and hoisting equipment.

Mechanical Design 2A, 2B, 2C, 2D (TF457)

Mechanical Design 2AD and 2BD (TF468 and TF469)
The application of engineering principles and applied mechanics to the analysis of design problems in machine elements, structural work and basic pipe work and associated equipment.

Mechanical Design 3BD (TF482, TF483 and TF484)
Select one of the following:
(a) Products of Mechanical Plant
   Further analytical design and selection of multi-element systems together with material selection, manufacturing methods and design costing.
(b) Structures
   Additional principles of design of structures and structural projects. Use of AS1250 (the structures code) and the application of production and costing techniques of steel structure design.
(c) Process Plant and Pipe Work
   The design principles used in process plant and pipe work, costing and selection techniques and the principles of plant layout.

Mechanical Design and Drafting 1ABD (TF242)
Drafting practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

Mechanical Design and Drafting 1ABDK (TF241)
Drafting practices and the use of bearings, their lubrication and application. Belt and chain drives, clutches and gears. Joining methods including fasteners and welds. Piping arrangements, valves.

Mechanical Design 1AD (TF150)
Furniture and equipment, use of ASCZI, sectioning, assembly and detail drawings, developments (solid geometry).

Mechanical Design 2AK and 2BK (TF258)
This is a continuation of the subject. The subject is followed and the mechanical drafting subject and follows the same format as 1AK and 1BK, with the additional emphasis placed on designing power transmission elements, such as gear boxes, etc. Both Mechanical Design 1AK and 1BK and 2AK and 2BK form a combined two-year subject. This subject is internally assessed.

Mechanical Design (Production) (TF154)
This subject is concerned wholly with the development of basic theory and drafting skills relating to elements used in Production Tooling Design. Specific subjects include, fasteners, springs, limits and fits bearings, both plain and rolling contact bearings, levers. All drafting, comprising both sketching and formal drawing, is done on tracing paper.

Mechanics 1T (TF319)
Vectors, rectilinear and angular motion, acceleration and inertia and momentum. Friction, work power and energy, machines, mechanical advantage, velocity ratio and efficiency. Behaviour of materials under load.

Mechanics 2T (TF419)
Statics, kinematics, dynamics, stress and strain, shells and joints, beams, torsion, hydrostatics and fluids in motion. Laboratory work.
Metallurgy 1T (TF227)

Metrology 1A and 1B (TF318)

Metrology 1T and 2T (TF318 and TF420)
Metrology is concerned with the basic principles, correct procedures and methods associated with accurate measurement. It covers diameter, length, squareness and angular measurement, use of slip gauges, comparators, sine bars and tables. 2T is an elective and looks into the more specialised areas of metrology; thread and surface texture measurement, and the use of optical instruments and precision levels. In both years a significant proportion of the available time is spent on practical work.

Modern Metal Cutting (TF383)
A theoretical approach to aspects of cutting materials, chip control, turning — tool wear, cutting efficiency and economics, chatter, milling — lead angles, cutter diameter and number of teeth, power requirements, vibration and surface finish, drilling — performance comparison, laser drills.

Organisation and Management for Quality A and B (TF195 and TF196)
Introduction to the concept of quality control as a system. Quality control systems Standards AS1057, AS1823-3, AS2000, quality manuals, policy and planning, standardisation specification, quality of design, conformance and performance, laboratory management, quality review and audit.

Physics 1H (TM160)
Five hours per week (full-time) during the day for one semester or two hours per week (part-time) during the day or evening for two semesters. Prerequisites: students must have completed Year 11 Physics.

Assessment consists of assignments and tests for each individual topic, an assignment and test on one elective assignment and an elective test.

This subject deals with a treatment of basic physical principles in topics which have been broken up into cores and electives. The core topics include: systems of units and dimension, vectors, kinematics, dynamics, work-power-energy-momentum and electro-statics. The electives include topics such as: thermodynamics, electricity, statics, acoustics, fluid mechanics and electro-magnetism. Students are expected to complete each of the core units at a mastery level of sixty-five per cent.

References
The material required for the successful completion of the course is provided by the college in the form of textbooks. However, if further reading is required the texts most suitable are those with the ‘basic physics’ titles or ‘introduction to physics’ provided, they deal in SI units.

Principles of Measurement (TF340)
The course is based on the basic scientific principles of measurement. Standards for-establishing quantities. SI derived units, nature of light and optical concepts, mechanical concepts in design and measuring instruments, thermometers, electrical measurement, calibration of Instruments and standards.

Process Heating (TP237)

Product Liability and Product Recall Management (TF464)
Provides a general appreciation of the legal responsibilities associated with quality control and methods adopted to meet these responsibilities. Current legislation, protection procedures, Australian design rules and standards, recall process, documentation systems.

Production Techniques 1A (TS150)
Introduces manufacturing industries and sub-systems. Types of production organisations. Processes and controls applied in quantitative and graphic form enabling the conversion of market requirements into saleable inventory.

Production Techniques 1B (TS151)
Advancement in detail on 1A. Examining in detail manufacturing planning. Various scheduling and estimating techniques including effects of change. Production Techniques 2A (TS250)
More sophisticated examination of the production management roles in organisation, policies, forecasting estimating control and to achieve economic operation of the company.

Production Techniques 2B (TS251)
Examines the practical methods of project management through use of network planning, efficiency controls and problem-solving techniques.

Properties of Materials 1AD (TF232)
Die penetrant, magnetic particle, X-ray, ultrasonic, eddy current, torque, compression, impact and fatique testing. Metal failure, corrosion, polymers and fabrics, shaping of plastics, adhesives, electrical materials.

Quality Control Systems and their Assessment (TF465)
The concepts and techniques of quality system audit, calibration system requirements, quality control system assessment concepts, contract supplier quality requirements, customer/supplier agreement of quality control assessment, AS2000, quality control system and product audits.

Quality Costs and Budgeting (TF463)
The economic aspects of production quality and quality control systems. Collection and analysis of quality cost data, quality cost indices, quality improvement and cost reduction, budgeting process, planning and operating the budget.

Refrigeration and Air-conditioning 1A and 1B (TF448)
The course of study provides the student with an appreciation of the principles and practice of refrigeration and air-conditioning. The course amounts to three hours per week for the whole year. The syllabus outline is as follows — properties of refrigeration, analysis of the vapour compression cycle, some operating characteristics of the whole cycle, descriptive work in the principle components, description and reason for major auxiliary components, descriptive treatment of absorption systems, common fault diagnosis and correction, psychometric properties of the air-water mixture, psychometric processes, heat transfer processes related to building heating and cooling loads, methods of heating, cooling, humidification and dehumidification of spaces, air cleaning methods, ventilation requirements, duct sizing methods.

Reliability and Prototype Testing (TF462)
 introdcuces the concepts and techniques of reliability and looks at the application of basic reliability analysis techniques to technical, administrative and managerial areas of quality control. Also covers aspects relating to timing in application of reliability methods and the reporting of results.

Robotics (TF452)
At the time of going to press, the details of this subject had not been finalised.

Specialised Machine Tools (TF384)
The various aspects of special production machine tools such as automatic lathes, centreless grinding and specialist machine tools related to laser technology, are examined.

Statistics (TM127)
 Introduction to basic statistical techniques, including arithmetic and geometric progressions, histograms, normal, binomial, Poisson and hypergeometric distributions, standard deviation, regression and correlation.

Statistical Quality Control 1 (TF197)
Application of principles of statistics to production, quality control, reliability and prototype testing. Introduction to basic statistical techniques, including arithmetic and geometric progressions, histograms, normal, binomial, Poisson and hypergeometric distributions, standard deviation, regression and correlation.

Statistical Quality Control 2 (TF297)
Study of methods applied in measuring and assessing variance in quality, continuous and acceptance sampling, design of experiments, failure modes, verification of statistical sampling results, cumulative seem techniques, defects analysis.

Technician Communications 1 and 2 (TH10 and TH20)
The first year covers the basic functional skills of oral and written communication particularly at the student’s personal and work situation. Year 2 broadens the work covered in Year 1 and also includes the writing of simple technical reports and practise in clear and critical thinking.

Technician Drafting (TF126)
This subject provides a basic understanding in projection, arrangement and detail drawings. Methods of fastening, transmission, introduction to steel framework, dimensioning.
Thermodynamics and Heat Transfer 1AD (TF412)
The concepts of temperature and heat, thermal expansion and heat transfer. Heat measurement. The properties of steam, its generation and usage. Air compressors, internal combustion engines and the use of fuels.

Toolmaking (other than Apprentices)
First year Theory and Practice (TF501/2)

Second year Theory Practice (TF503/4)
tions. Cemented carbides. Relief turning—form cutters, automatic and profiling slide. Errors in measurement. Temperature gradients, tempera-

Third year Theory and Practice (TF505/6)
Thread grinding, multi-start threads and gauges, relief ground taps, hob manu-
limator and alignment telescope.

Tooling and Inspection Methods (TF370)
The first two sections of this established syllabus cover the fundamentals of jig and fixture design and basic measurement. The third section is on quality control. The fundamentals of the distribution of process errors, frequency charts, histograms, distribution, control charts and their applications in industry are covered.

Welding
Electric Welding Theory 1 (TF710)
tion. Distortion, causes, effects, simple methods of control. Production of iron and steel, composition, properties, weldability, identification. Heat treatment, purpose, effects and applications. Resistance welding, pro-
cesses, types, uses, advantages.

Electric Welding Practice 1 (TF711)

Electric Welding Theory 2 (TF810)
Preparation of material for welding, code requirements. Flame cutting methods related to preparation, bevel, gauge and J grooving. Carbon steels, effect of carbon. Simple treatment related to microstructure and effects of heating and cooling on weld and parent metals. Weldability, mechanical properties of low, medium and high carbon steels. Elec-
trodes, manufacturing and testing, classification and coding, applications to welding operations. Welding procedures: methods, reason for, effects of. Introduction to mechanical testing, destructive and non-destructive methods. Heat treatment, types, effects, functions, applications. Fixtures and positioners, function, requirements, applications. Flame cutting and allied processes. Appreciation of other welding processes. TIG and MIG, resistance, submerged arc, electro-slag, etc. Welding costs, factors involved, examples.

Electric Welding Practice 2 (TF811)
Building up of worn surfaces. Fillet welds; all welds to gauge size, using a wide selection of electrode types and sizes. Flat and H/V position up to 12mm, multiple pass. Vertical up and down, overhead, horizontal positions, up to 100 mm. Joining of RSS to CCS plate in vertical position, single and multiple pass.

Butt welds: electrode requirements as for fillet welds. Prepared single and double Vu, flat, vertical up and down, horizontal. Prepared structural sections solid and hollow, flat position. Demonstrations of other welding processes, e.g. TIG, MIG, resistance, submerged arc, etc. Operational experience on as many units as possible.

Electric Welding Theory 3 (TF910)
General knowledge of SAA codes relating to welding. Safety requirements, welding, cutting, general, personal and operational requirements related to various applications. Elementary first-aid requirements. Quality control, inspection and testing of welds, destructive and non-destructive methods, internal and external weld defects and methods of correction.

Alloys steels, corrosion, creep and heat resistant, clad, manganese and cast. Knowledge of composition, properties, weldability and procedures. Cast iron, types, composition, properties, weldability, applications, welding requirements. Introduction to non-ferrous metals, common types, properties, applications, welding requirements.

Surfacing, types of wear, electrodes, applications, techniques. The welding of pressure vessels and structure, appreciation, joint types, workmanship, testing as per code. Outline of special welding processes, electron beam, laser, plasma, friction.

Electric Welding Practice 3 (TF911)
Fillet welds, all positions, full range of sizes and types, 6mm and smaller. Welding of 1.6mm LCS sheet. Butt welds, square and prepared, all positions, 6mm and thicker sections. Pad welds. Corner, edge and lap welds.

Test plates, preparation, welding, testing in accordance with SAA codes. Fillet and butt welds. Preparation, setting up and welding of small structures and weldments. Demonstration of welding and cutting of special steels, ferrous and non-ferrous, with as many processes as possible.

Welding and Fabricating (TF901)
The object of these units is to provide a general knowledge of: general fabrication techniques, jigs and fixtures, methods of joining, welding processes, testing techniques, standards and codes, metallurgical effects of welding and plant layout and work flow.

Work Measurement 2A and 2B (TF282 and TF283)
Frequency studies. Interference to production. General data system. Statistical work sampling. Non-repetitive work measurement. Master clerical data. EPS resources contributing to capacity. Filing systems.

Work Measurement 3 (TF382)
Wage payment plans. Labour budgets and controls. Complete tech-
niques project.

Work Methods Improvement 1A and 1B (TF184 and TF185)
This is an established syllabus used in other courses which looks at productivity and the factors that affect it. The syllabus covers the nature of work study, report writing, charting, recording, questioning techniques, clerical systems, job breakdown sheets, installation of new methods and ongoing programs.

Work Methods Improvement 2A and 2B (TF284 and TF285)
Work Methods Improvement 2C and 2D (TF286 and TF287)  
Value analysis. Product costing. Maintenance. Safety. CPM and PERT.  

Work Study 1H (TF337)  

Work Study 1 — Method Study (TF101)  
(Previously Work Method Improvement 1A (TF184))  
This unit is concerned with productivity and the application of method study techniques to improve it; the main topics are: definition and measurement of productivity. Methods of improving productivity. Union versus management conflict over productivity issues. The benefits of productivity increases for employees. Companies and the community. Setting priorities for tasks requiring method study. Cost benefit calculations. Assessment of human resource implications of changing work methods. The use of charting in method study. Selecting and drawing the most appropriate type of chart to record a particular job or process. Analysis of an existing method and the development of a new method. Preparation of submissions to management showing costs, sketches, phototypes and pilot runs.

Work Study 2 — Implementation (TF102)  
(Previously Work Method Improvement 1B (TF185))  
This unit is concerned with the factors affecting the application of methods improvement; the main topics are: analysing and comparing initial expenditure, operating costs and times needed to recover investment of alternative job methods. Preparation of written and verbal reports on method improvement proposals. Reasons for resistance to change and developing the acceptance of change. Techniques for selling ideas to people in the organisation. Trade unions and industrial relations. The function and social responsibility of unions and current trends in trade union activity. The types and causes of union management conflict. Conciliation and arbitration procedures and the concept of worker participation. The role of the work study officer with regard to industrial relations. Employee motivation. The contribution of behaviour science, job enrichment and worker participation in relation to motivation. The implementation of new methods, including training needs and redundancy issues. Procedures for maintaining the improved method. The importance and use of standard written practice for training records and procedures. The design of a training plan covering the factors of personnel changes, performance standards, production commitments and key tasks. Demonstrating good job instruction.

Work Study 3 — Time Study (TF103)  
(Previously Work Measurement 1B (TF183))  
The relationship of work measurement to method study. The uses of and procedures for establishing standard times. Different types of training methods and the steps involved in making a time study. The forms and equipment used in time study. Obtaining and recording all the necessary information about a job. Accurate recording of elemental times using the snap back timing method with a decimal minute stop watch. Determining the absolute error per set as the number of cycles required for a particular time study. Rating the performance of operators with different rating scales. Normalised time calculations. Calculation of appropriate allowances for establishing standard time. Different types of allowances, including individual, group, contract, policy and standard allowances. Determination of standard times for operations restricted by machine control and unrestricted operations. Calculation of allowances for restricted work. Carrying out a proof study or production study.

Work Study 4 — Predetermined Motion Time Standards (TF104)  
(Previously Work Measurement 1A (TF182))  
Advantages and disadvantages of predetermined motion time standard systems. Different levels and types of PMTS systems. The principles and application of methods time measurement. Factors influencing the performance of simultaneous motions. The advantages and limitations of master standard data. The elements of MSD and their derivation from MTM elements. The concepts of low conscious and high conscious control. Identifying distances used in MSD. Using MSD to establish standard times for a job. The application of MODAPTS for establishing standard times including the advantages and limitations of MODAPTS. The identification of movement classes, terminal activities, simultaneous activities, indeterminate moves and the manipulation float. The relationship between low and high conscious controls. Designing and developing a standard data system. The principles of coding data and the construction of an alpha-mnemonic coding system.

Work Study 5 — Estimating and Statistical Techniques (TF105)  
(Previously Work Measurement 11A)  
The objective in this unit is to enable the student to apply work measurement techniques to any relevant task. The main topics are as follows. Activity sampling including its statistical principles and uses, advantages and disadvantages, procedures for application, forms design, confidence and accuracy calculations, control charts, standards setting and production study. Group timing techniques which includes: relationship to activity sampling, advantages and disadvantages, procedures for making a study, and statistical calculations for setting a standard time. Machine interference including the following topics: man and multi-machine workload, cyclic and random interference, service time calculations, tables and formulae, application of allowances, the activity sampling approach to machine allowance and costs associated with allocating machines to operators. Estimating techniques including the analytical estimating method, estimator’s qualifications, uses of analytical estimating. Estimates based on engineering performance standards.

Work Study 6 — Financial Analysis and Labour Control (TF106)  
This unit covers the following topics. The major components of a financial information system, data collection methods and types of reports. The need for financial information and how it is used. Analysis and interpretation of balance sheets, profit and loss statements, cash flow statements and manufacturing statements. Use of financial ratios to evaluate solvency, efficiency and profitability. Comparison of ratios with industry averages and prior periods. Standard costing systems and break-even analysis. Financial decision-making on capital expenditure and make or buy problems. Preparing cost/benefit analyses. Incentive wages plans including the main types, requirements, effects on output and industrial relations, limitations and wage calculations. Design of a complete incentive scheme including setting up the standards, recording of output and the labour control system. Designing a group incentive scheme. The measured day work system including a comparison with incentive plans, setting performance standards and appropriate labour control. Design of a labour cost analysis system.

Work Study 7 — Ergonomics and Work Environment Design (TF107)  
(Previously Work Methods Improvements 11A)  
The general aim of this unit is to enable students to understand the theoretical basis of man-machine work environment relationships. The principles and application of methods time measurement. The identification of critical areas including human factors including human senses, the nature of ergonomics and the man-machine relationship. The design of efficient work systems and the workplace. The effects of noise, illumination, heating and ventilation and the Australian Standards relating to these. The effects of fatigue and stress. Benefits of good housekeeping. Risks associated with pollutants, control methods and legislative requirements. Plant layout including: history and types of plant layout, approaches to plant layout, drawing standards, systematic layout planning and checklists for plant layouts. Materials handling systems and the selection of suitable equipment.

Work Study 8 — Network Analysis (TF108)  
This unit provides an understanding of the factors affecting project planning and enables the student to apply network analysis techniques to planning tasks. The topics include: a brief outline of the origins of the CPM/PERT technique, comparison of networks with conventional bar charts and the applicability of networks and bar charts. Networking conventions and establishing logical relationships between activities. Preparation of networks for given projects. Forward and backward pass calculations and the identification of critical paths. Total, free and independent float. Designing a float table. Converting a network into a time-bar diagram. Resource allocation and the manipulation float. The costing of projects including the increased costs of ‘crashing’ to reduce activity durations and probability of achieving deadlines and cost estimates. PERT and its relationship to CPM. Applicability of PERT and an appreciation of precedence diagrams.
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N.A. Speel, BAppSc, DipEd
G. Tolkien, ARMIT, TTTC
B. Tyrer, BSc, DipEd

The General Studies Division consists of two departments and a unit as follows:

Compensatory and Community Access Unit

The Unit provides help for students enrolled in all Swinburne courses who may have problems coping with the English and/or mathematics components of their courses. Lack of skills in English and/or mathematics may affect students' progress in the range of subjects which make up their courses. Adult members of the local community can also avail themselves of mathematics and English tuition. Such tuition is available on an individual or small group basis.

Humanities Department

The Department has responsibility for the humanities and business TOP courses. In addition it offers a bridging humanities program and a number of short courses.

Mathematics and Science Department

The Department has responsibility for the science and engineering TOP courses. In addition it offers certificates of applied science (science laboratory and biology), a bridging science program and a number of short courses.

The following courses are offered:

Tertiary Orientation Programs
H54LZF Humanities/Business — full-time
H54LZP Humanities/Business — part-time
S54EZP Science/Engineering — full-time
S54EZF Science/Engineering — part-time

Applied Science Programs
S21ABC Certificate of Applied Science
S21ABC (Science Laboratory)
S21ABG Certificate of Applied Science
S21ABG (Biology)
S51ABC Certificate Bridging Program
S45ABS Laboratory Safety
S45ABP Introduction to School Laboratory Practices

Bridging and Community Access Programs
S51LZC Bridging Science
H51LZA Bridging General Studies
S51LZN Special Bridging Program
H51LDN Reading, Writing & Study Skills
C45LDB Volunteer Tutor Training
C51LDB Basic Studies Program

Programs for Mildly Intellectually Disabled Students
C33LZA Work Education Program
C33LZT Transition Program
C33LZE Vocationally-oriented Evening Classes
C45LVP Vocational Preparation Program
C52LDB Basic Studies Program (Special)

Higher School Certificate
H55LZB Higher School Certificate — part-time

A range of Group 1 VISE subjects are offered by Business, Humanities and Mathematics and Science Departments.
Tertiary Orientation Program

The Tertiary Orientation Program at Swinburne College of TAFE is designed to meet the needs of students who intend to proceed to tertiary education, in particular, to the diploma and degree courses offered by the faculties of arts, art, applied science, business and engineering of Swinburne Institute of Technology.

The course offers a bridging program to tertiary education for students with a variety of backgrounds. While the program is based on needs for secondary student transition to tertiary study, it also provides a most suitable preparation for tertiary study for more mature people.

The program is studied in a tertiary environment. First class educational facilities are available; these include library, audio-visual, computer, student amenities and counselling. Experienced teaching staff maintain a close liaison with staff in the tertiary division.

Course structure

Twenty-one subjects are offered. Students usually take five subjects and are required to pass a minimum of four including English, to meet tertiary entrance requirements. A restricted range of subjects is available for part-time day and evening students.

The science TOP has a core of three subjects, English, Accounting and Economics, plus two elective subjects.

The humanities TOP is offered in five courses, each course consisting of a different core of three subjects, and two elective subjects.

The science TOP offers courses in:

- Engineering Science
- Biological Science
- Computer Science
- General Science

Before choosing subjects, students, especially part-time, are advised to check the entrance requirements for tertiary courses in which they may be interested.

Various assessment procedures are used. Assessment is regarded as a continuous function and is not based solely on performance in formal examination.

Subjects

Accounting (TS009)

Art in Society (TH003)

Biology (TM004)

Chemistry (TM005)

Computer Studies (TM028)

Concepts of Mathematics (TM027)

Economics (TS008)

English (TH101)

English as a Second Language (TH060)

History of Western Civilisation (TH015)

Introduction to Politics (TH020)

Italian Studies (TH050)

Legal Studies (TS006)

Mathematics (Science) (TM026)

Mathematics (General) (TM030)

Media Studies (TH032)

Physics (TM040)

Society, Technology and Change (TH055)

Study of Ideas (TH045)

Themes in Australian History (TH001)

Women's Studies (TH065)

Prerequisites and entrance requirements

The standard qualification for entry is a pass (non-terminal) at Year 11. Applications from early school-leavers and others without the formal qualifications will be considered.

Although preference is given to students from Eastern Metropolitan and Maroondah region technical schools and to people who have had a break from formal secondary schooling and now wish to return, there are usually a number of places available for other applicants.

Enquiries

Information Office, 819 8444

Humanities/Business, 819 8370

Science/Engineering, 819 8378

Tertiary Orientation Program subject details

Students are advised not to purchase text books or references until classes commence.

Accounting (TS009)

Full-year accounting course for students with limited or no prior knowledge of book-keeping or accounting.

Topics covered include: basic concepts and terminology; the accounting equation; recording methods; balance day adjustments; final reports; accounting procedures for control; accounting for multiple ownership; analysis and interpretation of final reports and funds statements.

Art (TH003)

This subject is equally divided between a historical and theoretical study of art (particularly modern art) and practical art (five hours per week).

Theory

The syllabus is designed to introduce students to the study of art in its social context, to encourage an understanding of art on a broader scale, and to encourage the interest and abilities of each individual (two hours per week).

Practical

Painting and drawing are developed through exercises, individual projects, and class discussion. Elective media are approached through individual projects decided on by consultation between teacher and student (three hours per week).

Biology (TM004)

The intention in this course is to investigate in a practical way, what takes place within the individual organism— with the internal structure, physiology and biochemistry— and with the ways in which the characteristics of the organism are determined and passed from one generation to the next.

A previous study of biology is recommended but not compulsory.

Topics

The scientific process

Internal organisation of higher plants and animals

Cells

Reproduction and genetics

Evolution

Method

Emphasis on practical work in biology using both first-hand and second-hand data.

Questions and answers assignments on text material.

Films and other audio-visual aids.

Excursions.

Assessment

Students are required to submit written reports on practical work.

- Class questions-answers assignments — 20%
- Assignments on films and excursions — 20%
- Unit (topic) tests will be administered — 20%
- Major assignment on student’s own topic — 15%
- Final end-of-year examination — 40%

Textbooks

Biological Science — The Web of Life. 3rd edn, Canb., ACT, Australian Academy of Science, 1981


Chemistry (TM005)

This subject comprises five hours per week, three hours of theory and a two-hour practical session in the laboratory.

Prerequisite, Year 11 applied science standard chemistry

- Stoichiometry
- Atomic structure
- Periodic classification
- Bonding
- Thermochemistry
- Organic chemistry
- Equilibria, acid base, solubility, redox
- Electrochemistry

Practical (20% of overall assessment)

Students are required to submit written reports on all practical work.

Theory (80% of overall assessment)

- Final term examinations 60%
- Final semester examinations 40%

A pass in this subject requires a satisfactory attendance record and satisfactory results in both the theory and practical components.

Students are expected to wear sensible clothing in the laboratory including covered-in shoes. A laboratory coat and safety spectacles must also be worn at all times during the practical session.
Reference


Students will be provided with a practical manual to be used in conjunction with the prescribed text.

Concepts of Mathematics (TM027)
Prerequisite, Year 11 applied science standard mathematics

The topics studied include logic, computers, sets, combinations and permutations, binomial theorem, probability, vectors and matrices, systems of linear equations and inequalities, Markov chains and game theory.

A major emphasis in this course is a development of insight into concepts of modern mathematics through an examination of applications of mathematics arising in the working world of the engineer and technologist, and the economist.

The main approach to theoretical material is through considering possible methods of solving problems. The history of the original discovery of this solution is given to extend the students' insight into the development of mathematics and to general ideas about mathematics. Instruction is, therefore, mainly the traditional class type for some topics but in some areas considerable use is made of interactive computer facilities, audio-visual aids, student talks, projects and library facilities.

Overall, course-related activities entail or are equivalent to a total of five class hours each week excluding class exercises, assignments, computer work, library work, etc. One hour per week of the five hours is spent on work with computer programming.

Assessment is made on a continuous basis; the final grade achieved by each student being based upon performance in the assessable tests and exercises which will be set at approximately three-weekly intervals. Students are expected to achieve 75% at each test or a subsequent test.

The following topics are given:
1. Boolean algebra
2. Counting and probability
3. Statistics
4. Systems of linear equations and matrices
5. Linear programming
6. Game theory
7. Markov chains
8. Computer programming

Reference
Gilligan, L.G. and Nenno, R.B. Finite Mathematics with Applications to Life. 2nd edn, Santa Monica, Calif., 1975

Economics (TS008)
The aim of this course is to introduce students to the economic aspects of human behaviour with emphasis upon the application of theories and principles to economic problems and social issues within the framework of the Australian economy. The underlying theme for this introductory course in economics is the impact of economic activity upon human welfare.

The course may be attempted by students who have not studied economics previously.

English (TH010)
The course requires the student to read widely, research topics and form judgements, developing the skills of comprehension, thinking and writing, form the basis of the course. A wide range of written work is covered including essay, original writing and critical evaluation. Oral communication is emphasised, involving practice in short reports, discussions, debates and interviews. In addition students will be offered a wide choice of electives including extra study in basic English, media, drama, literature and writing.

English as a Second Language (ESL) (TH060)
A course which is designed to cater for the specific language needs of students whose first language is not English and who have been in Australia for 5 years or less. The syllabus aims to promote language skills to a standard which will enable tertiary study by developing the ability to read critically a wide range of materials, to write in a variety of styles to speak confidently and to listen effectively. The course also aims to introduce students to Australian and other relevant literature, and to develop an understanding of Australia’s cultural heritage.

History of Western Civilisation (TH015)
A survey of major developments in western civilisation from ancient times to the present. Emphasis is on the study and methodology of history, including an introductory unit on the nature of history. The scope of the course is broad but particular emphasis is given to Greece and Rome in the ancient world and the major problems confronting the western world in the twentieth century.

Introduction to Italian (TH050)
This subject covers an introduction to the Italian language, idioms, simple sentences and conversation, as well as a study of Italian culture, customs, way of life, economy, political system, history, geography and the contribution of the Italian migrants to our way of life.

Introduction to Politics (TH020)
The course is designed to allow students to make a study of certain aspects of Australian politics. The emphasis is on political forces, procedures and machinery. The nature, elements and interaction of politics are questioned. Comparisons are made with the United States system.

Legal Studies (TS006)
Full-year course for students with limited or no prior knowledge of legal studies. This course is designed to assist students in understanding the operations of law in our society. It should equip students with an understanding of how law affects our everyday lives, with particular regard to the rights and safeguards it bestows and the obligations and limitations it imposes. Topics covered include the need for law, the structure and development of the Australian Legal System, the law-making bodies and legal process, crime and criminal sanctions, the Law of Torts, consumer protection and the form of business organisations.

Mathematics (Science) (TM026)
Prerequisite, Year 11 applied science standard mathematics

This subject is desirable for all science/engineering TOP students, and intends to provide participants with mathematical skills prerequisite to their enrolment in engineering and applied science courses at tertiary institutions.

Teacher-centred classroom work forms the basis of this subject; audio-visual aids, library work, student projects and a regulated program of assignments and tests supplement this class-work where appropriate.

Course work for the subject entails five hours class-work each week, together with a total of about five hours each week spent in private study. The final grade achieved by a student in this subject depends both on scores obtained in the compulsory tests; assignments set from time to time and upon marks in two major semester examinations:

Regular tests and assignments — 40% of final score
Semester one examination — 25% of final score
Semester two examination — 35% of final score

The following topics are covered:
1. Review of fundamental concepts
2. Differentiation
3. Curve sketching
4. Exponentials and logarithms
5. Circular functions
6. Applications of differentiation
7. Statistics
8. Complex numbers
9. Integration
10. Applications of integration
11. Matrices
12. Differential equations
13. Vectors
14. Kinematics

Reference

A scientific calculator is essential.

Mathematics (General) (TM030)
Prerequisite, a pass in Year 11 mathematics

The course covers fundamental mathematical ideas for students who might be considering post Year 12 courses in Business Studies, Social Sciences such as Sociology and Psychology, Nursing, Physical Education and Primary Teaching. It also gives the opportunity to students to develop sufficient skills to have a broad understanding of fundamental mathematical concepts and methods, and of its applications to a range of situations which are practical and relevant to the technologically advanced society in which we live.
Core topics
1. A review of Basic Arithmetic and Algebra (8 weeks)
   Basic computational skills, equation solving, relations and functions and their graphs.
2. Linear Algebra (7 weeks)
   Matrix theory and applications, linear systems and an introduction to simple linear programming.
3. Probability and Statistics (7 weeks)
   Descriptive statistics, methods of counting, fundamentals of probability theory, inferential statistics — the binomial and normal distributions.
4. The Mathematics of Increments (7 weeks)
   Sequences and limits, differential and integral calculus.
5. Introduction to Computing (1 hour per week)
   Roles and uses of computers, capabilities of hardware and software, a computer language (BASIC), flowcharting design of simple programs. (Students will have regular access to IBM Personal Computers throughout the year.)

Extension topics
The following extension topics are being considered:
1. Fundamentals of Trigonometry
2. Computing (using hardware other than the IBM personal computer system)
3. Applications to Finance
4. Applications to Electronics

One or more of the extension topics may be integrated in the core of the course.

Students will have six hours per week scheduled class time, and are expected to spend two to three hours per week extra study.

In general, the notation concepts and methods will be explained in class time. The activity of problem-solving will take place in class time and in the students’ own time.

Assessment — core topics
Topic 1 Class topic test(s) 12%
Topic 2 Common topic test at the end of June 12%
Topic 3 Class topic test(s) 12%
Topic 4 Common topic test in October 12%
Topic 5 Common topic test, plus assignment 6%
Extension Topic(s) 6%
Final three (3) hour examination 40%

TOTAL 100%

Students must possess a calculator which has the following keys: log x, ln x, 10^x, e^x, y^x. Any scientific non-programmable calculator should be adequate.

Students will be given sets of notes and problems throughout the year, and in addition will have access to the Swinburne Library for further reference books and audio-visual materials.

Media Studies (TH032)
Media studies involves study of film, radio and television. The course takes a critical, historical and appreciative appraisal of film, television and radio, with a particular emphasis on these areas in Australia. There is a small component of practical film work in the course.

Physics (TM040)
Prerequisite, Year 11 applied science standard physics
Physics is usually a prerequisite for those students wishing to undertake courses in engineering and applied science at tertiary institutions. All students are assumed to have gained a pass in Year 11 Physics.

The subject is designed:
(a) to give students a thorough grounding in the basic principles, formulae and theories of physics;
(b) to give students practice in basic problem-solving techniques to assist in further studies;
(c) to develop an appreciation of the scientific method.

Five hours per week consisting of two hours formal instruction, two hours laboratory work, and one hour tutorials and/or tests.

<table>
<thead>
<tr>
<th>Topic number</th>
<th>Semester one</th>
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<tbody>
<tr>
<td>1</td>
<td>Geometric Optics</td>
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<tr>
<td>2</td>
<td>Vectors</td>
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<td>3</td>
<td>Kinematics</td>
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<td>4</td>
<td>Dynamics</td>
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<td>5</td>
<td>Equilibrium</td>
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<td>6</td>
<td>Circular Motion</td>
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<td>7</td>
<td>Gravitation</td>
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<tr>
<td>8</td>
<td>Units and Dimensions</td>
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<tr>
<td>9</td>
<td>Treatment of Errors</td>
</tr>
</tbody>
</table>

Topic number | Semester two |
<table>
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<tbody>
<tr>
<td>10</td>
<td>Simple Harmonic Motion</td>
</tr>
<tr>
<td>11</td>
<td>Electrostatics</td>
</tr>
<tr>
<td>12</td>
<td>Electromagnetism</td>
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<tr>
<td>13</td>
<td>Electric Currents</td>
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<tr>
<td>14</td>
<td>Light</td>
</tr>
<tr>
<td>15</td>
<td>Atomic Physics</td>
</tr>
<tr>
<td>16</td>
<td>Project (Electronics)</td>
</tr>
</tbody>
</table>

References
Many references are suitable for this course. Some useful ones are:
Gardiner, E.D. Problems in Physics, SI edn

A scientific calculator is essential.

Society, Technology and Change (TH055)
An introduction to sociology with particular emphasis on the issues of the impact of new technology on society. The subject consists of a theory unit, which deals with sociological issues and the impact of new technology and a practical component which deals with research methods, data collection and analysis. Some computer work is also possible for students with an appropriate background.

Study of Ideas 1 (TH045)
This course has two main aspects.
1. Study of Ideas will provide an introduction to philosophy and the various social sciences, and humanities subjects commonly found in tertiary courses, such as psychology, sociology, historical and political studies. Its purpose here is to equip students with ideas and skills that will enable them to cope with the requirements of future studies.
2. Study of Ideas will also enable students to gain various life skills which should prove valuable in terms of their growth as individual human beings. There will be emphasis on the clarification of values in this aspect of the course.

Study of Ideas 2 (TH045)
An alternative approach for students interested in psychology.

The subject Study of Ideas is essentially about ideas. One important area of ideas is human behaviour, or psychology. This alternative syllabus focuses on the ideas that belong to psychological study. Its main emphasis is upon the development of humans through childhood and adolescence in reference to perception, thinking, emotions and social development, etc.

Themes in Australian History (TH001)
Covers the period 1750-1939. The topics are planned to explore developments in Australian history and whether they have persisted, changed or become myths. Students have the opportunity to do further research into topics of particular interest to them. Primary material is basic and wider reading encouraged.

Women's Studies (TH065)
This subject offers an interdisciplinary approach to the study of women in society. Topics in the core include the emancipation of women: historical perspective, biological and behavioural sex differences, gender roles and socialisation, images of men and women in the arts, gender and language, the family, parenthood, marriage, divorce and work. Electives offered include:
- Women and Art
- Women and Communication
- Women and Education
- Women and Health
- Women and History
- Women and Literature
- Women and Media
- Migrant Women's Experiences
- Women and Politics
- Women and Politics


**Applied Science Programs**

**Certificates of Applied Science**

**S21ABG — Biology**
**S21ABC — Science Laboratory**

Certificates of Applied Science provide a range of diploma level, flexible, job oriented courses for those whose work is primarily concerned in giving support to scientists, engineers, and higher level management.

**Career potential**

Many diversified career prospects are available for students undertaking the course. Laboratory personnel may be classified as Technical Assistants, Laboratory Assistants, Laboratory Technicians and Technical Officers. Industrial, biological, educational and governmental laboratories are seeking trained technical staff.

The purpose of these courses is to produce graduates who, skilled in modern laboratory techniques and methods, are capable of providing immediate technical support to professional scientists, engineers and teachers.

**General course structure**

The courses are available as:
- 1 year full-time followed by 2 years part-time, or
- 4 years part-time requiring usually two evenings and one afternoon of attendance weekly.

During the part-time stages students generally obtain a half-day release from their employers who, in return, gain benefit from their employees’ increased awareness and competence in modern technology.

A minimum of two years of relevant, concurrent work experience is required before a student can graduate with a Certificate of Applied Science.

An approved course consists of 24 semester units to be selected in accordance with the individual course requirements.

**Entrance requirements**

The usual requirement is that the student complete a course of study at the Year 11 level. A background of chemistry, mathematics and physics is recommended, but such knowledge will not be assumed.

Applicants with some years of laboratory work experience may, however, be admitted with less than full entry requirements if they can demonstrate their capacity to succeed in the course.

Students starting the course in the part-time mode are generally employed in a laboratory.

Full-time students will be required to undertake a period of practical placement during the year.

**Dates for enrolments**

Students may enrol for the course during the last week of each semester in the last two weeks of June of each year.

Exemptions may be granted to students who have completed equivalent level studies, e.g., subjects offered by other technical colleges.

Entry to degree and diploma studies in Applied Science is possible after completion of this certificate course.

**Further information**

Course Co-ordinator, Mr. C. DeMartinis, 819 8805
Mathematics/Science Department Secretary, 819 8378

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**Course details**

**S21ABG Certificate of Applied Science (Biology)**

**Venue**

The course is conducted at Burnley Horticultural College, Swinburne College of TAFE and Box Hill College of TAFE (Whitehorse Campus) on a multi-campus basis.

**Objectives**

The great variety of work carried out under the mantle of biology results in technical staff needing both general training and development of specialisation skills in particular areas.

This course, therefore, has been designed:

- to provide a solid foundation in general biology and a highly developed degree of skill in specialised areas, by provision of a large number of elective units;
- to service the specified needs of industry in the area of biology by providing complementary training to that gained on the job for technical staff working in the laboratory or in the field;
- to enable students to exercise practical skills essential for a technician within a field of biology and to understand the theory pertaining to those skills so that they are able to make sound judgments in their application;
- to emphasise the rational basis of biology and encourage the development of rational thought and clear expression in students, to enable them to perform effectively, the duties of a laboratory and field technician;
- to give students a sense of achievement and a recognisable qualification by the issue of a certificate and to ensure that a biology technician has equivalent sub-professional standing to that of technicians working in other areas of applied science.

**Course structure**

The course consists of 24 units: 10 of which are compulsory and 14 electives, chosen according to the individual needs of employers and students. Units chosen must include at least seven of a biological nature (marked *). Students are encouraged to discuss their proposed selection of units with their employer and with college staff. In this way a relevant course of study may be developed to the advantage of both student and employer. The course is structured in such a way as to allow appropriate additional or alternative units to be taken in the event of a change in employment by a student or graduate of the course.

**Code**

**Unit**

<table>
<thead>
<tr>
<th>Core units</th>
<th>Code</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA130131</td>
<td>Biology Practices 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>TA101102</td>
<td>Chemistry Practices 1 and 2</td>
<td>2</td>
</tr>
<tr>
<td>TH133134</td>
<td>Communication Skills A and B</td>
<td>2</td>
</tr>
<tr>
<td>TA143</td>
<td>Computation</td>
<td>1</td>
</tr>
<tr>
<td>TA264</td>
<td>Biology Laboratory Hygiene</td>
<td>1</td>
</tr>
<tr>
<td>TA111</td>
<td>Physics Practices 1</td>
<td>1</td>
</tr>
<tr>
<td>TA112</td>
<td>Physics Practices 2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Elective units**

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA396</td>
<td>Agricultural and Field Techniques</td>
</tr>
<tr>
<td>TA256/257</td>
<td>Anatomy and Physiology 1 and 2</td>
</tr>
<tr>
<td>TA339</td>
<td>Animal Nursing (Anaesthesia and Surgical Practice)</td>
</tr>
<tr>
<td>TA340</td>
<td>Animal Reproduction</td>
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<tr>
<td>TA245</td>
<td>Botany</td>
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<tr>
<td>TA410</td>
<td>Care and Breeding of Farm Animals</td>
</tr>
<tr>
<td>TA380/391</td>
<td>Chromatographic Analysis 1 and 2</td>
</tr>
<tr>
<td>TA441</td>
<td>Computer Applications</td>
</tr>
<tr>
<td>TA413/414</td>
<td>Ecological Methods 1 and 2 (12, 13, 43, 44)</td>
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<tr>
<td>TA390/310</td>
<td>Electron Microscopy 1 and 2 (26, 33, 34, 53)</td>
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<tr>
<td>TA418</td>
<td>Entomology</td>
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<tr>
<td>TA316</td>
<td>Experimental Design</td>
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<tr>
<td>TA483</td>
<td>Glassworking</td>
</tr>
<tr>
<td>TA421</td>
<td>Greenhouse and Growth Cabinet Management</td>
</tr>
</tbody>
</table>
Course duration
The course is usually completed by part-time study over a period of four years.

Entrance requirements
Applicants to the course must have completed Year 11 or equivalent and will be expected to demonstrate concurrent employment in appropriate work such as work in a biology laboratory. Applicants with several years previous experience may also be admitted to the course.

Qualification for the certificate and exemptions
Students who have gained a pass in a unit from another course which is of at least equivalent standard to the particular unit in this course, may be granted an exemption in that unit. To gain a Certificate of Applied Science (Biology), a student must complete those units which characterise the course and have at least two years’ concurrent work experience associated with study, while completing the certificate. Biology Practices 1 and 2, Biology Laboratory Hygiene and those units denoted with an asterisk, are considered to be characterist of the course.

S21ABC Certificate of Applied Science (Science Laboratory)

Course structure
All students undertaking this course are required to complete 11 units detailed in Category 1 below covering the area of Chemistry, Communication, Mathematics and Physics.

Technicians in industrial, college and government laboratories must complete Statistics and a minimum of four units from Category 2A.

Technicians in school laboratories are required to complete the units from Category 2B, although they should be encouraged also to fulfill the Category 2A requirements.

An approved course consists of 24 units selected from Categories 1, 2A/2B and 3.

The training provided deliberately encompasses a wide range of skills, techniques and processes (as shown in the course details), so that graduates can meet the increasing technological and administrative demands being placed upon them.

In some cases, students involved with this course have been able to further their knowledge by gaining entry to degree and diploma courses in applied science.

Unit value

<table>
<thead>
<tr>
<th>Category 1 (Common units)</th>
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</thead>
<tbody>
<tr>
<td>TA101 Chemistry Practices 1</td>
<td>1</td>
</tr>
<tr>
<td>TA102 Chemistry Practices 2</td>
<td>1</td>
</tr>
<tr>
<td>TA111 Physics Practices 1</td>
<td>1</td>
</tr>
<tr>
<td>TA112 Physics Practices 2</td>
<td>1</td>
</tr>
<tr>
<td>TA143 Computations</td>
<td>1</td>
</tr>
</tbody>
</table>

Second year

| TA201 Chemistry Practices 3 | 1 |
| TA202 Chemistry Practices 4 | 1 |
| TA203 Physics Practices 3 | 1 |
| TA204 Physics Practices 4 | 1 |
| TH133/134 Communication Skills A & B | 2 |

Category 2A (Technicians in industrial, college and governmental laboratories)

| TA144 Statistics | 1 |
| Plus a minimum of four Instrumental Technique units selected from the following: |
| TA390/391 Chromatographic Analysis 1 and 2 | 2 |
| TA436 Radioactive Methods | 1 |
| TA465/466 Electrical Methods 1 and 2 | 2 |
| TA458 Vacuum Techniques | 1 |
| TA480 Scientific Photography 1 | 1 |
| TA481 Scientific Photography 2 | 1 |
| TA482 Microscopy and Photomicrography | 1 |
| TA490/491 Spectrophotometric Analysis 1 and 2 | 2 |

Category 2B (To be taken by school laboratory technicians)

| TA151 Biology Practices 1 | 1 |
| TA152 Biology Practices 2 | 1 |
| TA210 Laboratory Workshop Practice 1 | 1 |
| TA211 Laboratory Workshop Practice 2 | 1 |
| TA312 Laboratory Management | 1 |

Category 3 (Elective units)

| TA301 Biochemistry 1S | 1 |
| TA331 Organic Chemistry 1 | 1 |
| TA332 Oil and Polymer Chemistry | 1 |
| TA46 Microbiology 1S | 2 |
| TA45 Introduction to Electronics | 1 |
| TA453 Glassworking | 1 |
| TA461 Biochemistry 2S | 1 |
| TA462 Microbiology 2S | 2 |
| TA441 Computer Applications | 1 |
| TA305 Educational Aid Techniques 1A | 1 |
| TA306 *Educational Aid Techniques 1B | 1 |
| TA307 *Educational Aid Techniques 1C | 1 |
| TA308 *Educational Aid Techniques 1D | 1 |
| TA470 Project | 2 |

*These subjects are not recommended for industrial laboratory technicians but will be offered for school laboratory technicians when demand warrants.

†The project is carried out in the student’s place of employment by special arrangement between the employer and the college staff.

S51ABC Certificate Bridging Program

The course is offered for students who have passes in one or more of Biology, Chemistry and Physics at Year 12 level or higher, and who wish to qualify for exemption from the relevant first-year subjects of the Certificate of Applied Science.

Subjects are:

- Biology C (TA1001)
- Chemistry C (TA1002)
- Physics C (TA1003)

S45ABS Laboratory Safety

This course, of approximately 30 hours duration, is designed to promote safe laboratory practices in industrial, research and school laboratories. Topics covered include: role of laboratory personnel, safety procedures, radiation hazards, biological hazards, chemical hazards, mechanical hazards, fire prevention and protection, accident investigation and reporting.

S45ABP Introduction to School Laboratory Practices

This course offers a program of elementary laboratory skills for prospective school laboratory assistants. The course is of approximately 70 hours duration.

Further information

Course Co-ordinator, Mr C. DeMartinis, 819 8805
Mathematics/Science Department Secretary, 819 8378
Applied Science subject details

Students are advised not to purchase text books or references until classes commence.

Notes:
1. One unit normally involves 3 hours per week class attendance for one semester
2. Subjects marked thus (*) are not recommended for industrial laboratory.

*Agricultural and Field Techniques (TA336) (1 unit)*
Aims of agriculture, use of equipment, experiment design, soil testing, pasture and crop preparation, basic meteorology, harvesting, animal care, forest care.

*Anatomy and Physiology 1 and 2 (TA256/257) (1 unit each)*
The structure and function of the vertebrate organism with emphasis on mammals and birds.

*Animal Nursing (Anaesthesia and Surgical Practice) (TA339) (1 unit)*
Animal anaesthetics, their applications and practice in their use. Post-operative care of laboratory animals. Aseptic techniques.

*Animal Reproduction (TA330) (1 unit)*
Breeding of laboratory animals, colony selection and development, recognition of ovulation and pregnancy, gestation, record keeping.

Biochemistry 1S (TA301) (2 units)
Prerequisites, Chemistry Practices 3 and 4

References
Foth, R. Introduction to Biochemistry. Phil., Saunders, 1978

Biochemistry 2S (TA401) (2 units)
Three hours per week for two semesters

Prerequisite, Biochemistry 1S

Study of biochemistry in certain important areas. Enzyme action, digestion, nutrition, isotopes, blood, muscle nerve biochemistry, Heredity, Immunology. Analysis of protein. Hormonal regulation.

Reference
See teacher in charge.

Biology Laboratory Hygiene (TA254) (1 unit)

Animal and plant diseases — prevention and recognition, dealing with them; cleaning and sterilisation, first-aid; use of radioactive material.

Biology Practices 1 (TA130) (1 unit)

Three hours per week for one semester

Scientific methodology, specimen collection and display, specimen identification and classification, biology and the law.

References

Biology Practices 2 (TA131) (1 unit)

Three hours per week for one semester

Assessment, tests, assignments and practical work

Evolution, cell structure, anatomy and physiology, ecology, genetics and reproduction.

References
As per Biology Practices 1.

*Biology 2A (TA251) (1 unit)*
Prerequisites, Biology Practices 1 and 2

Maintenance of microbiological cultures in secondary school situations
Preservation of macroscopic and microscopic specimens.

*Botany (TA245) (1 Unit)*

History, plant classification and detailed identification; plant ecology; crop plants, pasture plants and weeds; native plants, plant anatomy.

*Care and Breeding of Farm Animals (TA410) (1 unit)*
The experimental and farm use of sheep, cattle, pigs, horses and goats. Nutrition, breeding, housing, disease prevention and general management.

Chemistry (TA333) (1 unit)

Prerequisites, Chemistry Practices 3 and 4

Theory and practice of mechanisms and polymerisation, structure and properties of polymers, classification of polymers, additives, mechanisms of deformation, forming and working.

References
See teacher in charge.

Chemistry Practices 1 (TA101) (1 Unit)

Three hours per week for one semester

Assessment, satisfactory performance of student objectives will be assessed by tests, assignments and practical work

A study of atomic structure, bonding, stoichiometry, safety and laboratory skills. Heavy emphasis is placed on safe laboratory practices and analytical procedures.

References
Cherim, S.M. Chemistry for Laboratory Technicians. Phil., Saunders, 1971
Hawkins, M.D. Technician Safety and Laboratory Practice. Lond., Cassell, 1980

Chemistry Practices 2 (TA102) (1 Unit)

Three hours per week for one semester

Assessment, satisfactory performance of student objectives will be assessed by tests, assignments and practical work

Volumetric analysis, acids and bases, electrochemistry and organic chemistry.

References
As for Chemistry Practices 1.

Chemistry Practices 3 (TA201) (1 Unit)

Prerequisites, Chemistry Practices 1 and 2

Assessment, unit tests, practical work and assignments throughout the semester

Organic Chemistry and analytical techniques centering around titrimetric, compleximetric and colour metric analysis.

References

Chemistry Practices 4 (TA202) (1 unit)

Three hours per week for one semester

Prerequisites, Chemistry Practices 1 and 2

Assessment, unit tests, practical work and assignments throughout the semester

Sampling and spot-testing, solubilities and gravimetric analysis, electrochemistry and introduction to instrumental techniques.

References

Chromatographic Analysis 1 (TA309) (1 unit)

General chromatographic theory; principles and practices of paper, thin layers, ion exchange and size exclusion chromatography; solvent extraction and electrophoresis.

Chromatographic Analysis 2 (TA301) (1 unit)

Principles and practices of gas chromatography and high performance liquid chromatography.

Communication Skills A and B (TH133, TH134) (1 unit each)

Two hours per week for two semesters

Assessment, based on set tasks including class work and group participation

Methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, memos, media analysis. Core studies plus specialised options.

References
A class text and printed notes.
Computations (TA143) (1 unit)
Two hours per week — evening only, one semester
Assessment consists of six unit tests and two assignments

References

Computer Applications (TA441) (1 unit)
Two hours per two weeks for one semester
Assessment is by project and programming assignments given throughout the course.
Interpretations of printouts, simple programming — BASIC, FORTRAN, program development. Applications — sales, production control, stock control, etc.

References
FACOM and DEC Manuals, Penguin

*Ecological Methods 1 (TA143) (1 unit)
Term: experiment design, data collection, map reading, camping and survival, maintenance and use of field equipment, meteorological calculations.

*Ecological Methods 2 (TA414) (1 unit)
Field notes, data presentation, surveys, trapping and tracking.

*Educational Aids Techniques 1A, 1B, 1C, 1D (TA305, TA306, TA307, TA308) (1 unit each)
Operation and maintenance of a wide range of educational aid equipment. Production of simple educational aid materials.

References
See teacher in charge

Electrochemical Methods 1 (TA465) (1 unit)
Three hours per week for two semesters
Prerequisites, Chemistry Practices 3 and 4
Assessment, unit tests, assignments and practical work.
Theory and practices of instrumental chemical analysis using potentiometry, polarography and related techniques.

Electrochemical Methods 2 (TA466) (1 unit)
Three hours per week for one semester
Prerequisites, Chemistry Practices 3 and 4
Assessment, unit tests, assignments and practical work.
Theory and practice of instrumental chemical analysis using conductivity, electrogravimetry, coulometry and related techniques.

References
See teacher in charge.

Electron Microscopy 1 (TA309) (1 unit)
Basic theory, instrument operation, use of chemicals tissue preparation.

Electron Microscopy 2 (TA310) (1 unit)
Interpretation of photomicrographs, instrument checking, using the instrument; the scanning electron microscope, use and operation; routine maintenance.

*Entomology (TA418) (1 unit)
Insect structure and physiology; detailed classification and identification, collection and handling, economic implications.

Experimental Design (TA316) (1 unit)
Statistical concepts and the use of statistics, especially in research work.

Glassworking (TA453) (1 unit)
Three hours per week (evening)

References
See teacher in charge.

*Greenhouse and Growth Cabinet Management (TA421) (1 unit)
Design and use; control and measurement; media preparation; plant care.

*Histological and Enzymatic Techniques (TA425) (1 unit)
Sample collection; extraction, centrifugation and gradient preparation, partition and fractionation; equipment; tissue preparation for slide making.

*Immunological Techniques (TA318) (1 unit)
Basic theory of immunology. Use and applications of various techniques including precipitation, agar gel diffusion, electrophoresis, complement fixation and haemagglutination.

Industrial Hygiene (1 unit)
Introductory theory course with emphasis on hazards encountered in the chemical laboratory and chemical plant.

References
See teacher in charge.

Introduction to Electronics (TA450) (2 units)
Three hours per week for two semesters
Assessment, written assignments and practical work.
Overview of modern electronics practices with emphasis on the operation and limitations of test equipment. Project work including design, construction and evaluation of an electronic device.

References
See teacher in charge.

*Invertebrate Zoology (TA320) (1 unit)
The structure and physiology of the major invertebrate groups, their identification, their economic importance.

*Laboratory Animal Procedures (TA219) (1 unit)
Legal and ethical aspects of animal experimentation; handling of animals, administration to animals — basic; use of anaesthetics — basic; housing; feeding and sexing of laboratory animals; nutrition, genetics and disease control in laboratory animals.

Laboratory Management (TA312) (1 unit)
Two hours per week for one semester
Assessment, assignments, design project and unit tests
Appreciation of laboratory design, flow patterns of materials and people; stock control, ordering procedures, laboratory records, stores operation, information courses — manuals, catalogues, standards. Laboratory safety, first-aid, storage and disposal of hazardous materials, legal requirements.

References
Class notes and other printed notes.

Laboratory Workshop Practice 1 A, 1B (TA210, TA211) (1 unit each)
Three hours per week for one semester
Practical workshop course. Materials and their properties, use of hand and power-operated tools, measuring instruments, joining techniques, soldering, glassworking, technical drawing.

Light Microscopy (TA428) (1 unit)
Theory of microscopy, microscope maintenance, simple repair, operation, special techniques.

Literature Review (TA324) (1 unit)
The student undertakes a search of the literature on a particular subject. Assessment is made on the basis of a properly presented report.

*Microbiology 1S (TA460) (2 units)
Three hours per week for two semesters
Prerequisite, recommended background in chemistry and biology
Assessment, two exams, essays and assignments and practical work.
Theory and practice including bacteriology, virology, serology, fungi and protozoa.

References
See teacher in charge.
*Microbiology 2S (TA461) (2 units)
Three hours per week for two semesters
Prerequisite, Microbiology 1S
Assessment, two exams, essays and assignments, practical work
Theory and practice including bacteriology, immunology and virology as major topics.

References
See teacher in charge

Microprocessors (TA327) (1 unit)
Functions of computers, software and hardware, algorithms, terminologies — use, file to file handling, program running, plotters.

Microscopy and Photomicrography (TA482) (1 unit)
Theory and practice of microscopy — basic and advanced techniques, photomicrography, film processing and printing.

*Native Fauna 1 (TA433) (1 unit)
The structure and behaviour of monotremes, marsupials and placental mammals, their housing and care.

*Native Fauna 2 (TA434) (1 unit)
Care of orphaned or injured animals; birds; reptiles and fish, their structure and behaviour, their housing and care.

Oil and Polymer Chemistry (TA332) (1 unit)
Three hours per week for one semester
Prerequisite, Organic Chemistry 1
Assessment, tests and assignments
Development of the petroleum industry. Extensive study of the most important petroleum-derived products, with special reference to oils and polymers and their industrial applications.

References
See teacher in charge.

Organic Chemistry 1 (TA331) (1 unit)
Three hours per week for one semester
Prerequisites, Chemistry Practices 3 and 4
Assessment, based on unit tests, assignments and practical work.
Systematic study of organic compounds and their properties and reactions. Examples to favour those which are useful to a subsequent study of oils, polymers and detergents.

References
See teacher in charge.

*Pharmacological Methods 1 and 2 (TA445, TA466) (1 unit each)
Pharmacological measurement, use of isolated organ preparations, drugs and animal behaviour.

Physics Practices 1 (TA111) (1 unit)
Three hours per week for one semester
Assessment, topic tests, laboratory reports and experimental techniques
Heat, SI units, errors and measurement, graphs, fluids, work, power and energy.

Reference

Physics Practices 2 (TA112) (1 unit)
Three hours per week for one semester
Assessment, topic tests, laboratory reports and experimental techniques
Optics, kinematics mechanics and radiation.

Reference

Physics Practices 3 (TA203) (1 unit)
Three hours per week for one semester
Prerequisites, Physics Practices 1 and 2
Assessment, unit tests, practical work and assignments
Errors, physical testing, heat and electricity.

References
See teacher in charge.

Physics Practices 4 (TA204) (1 unit)
Three hours per week for one semester
Prerequisites, Physics Practices 1 and 2
Assessment, unit tests, practical work and assignments
Introduction to electronics, computers and light.

References
See teacher in charge

*Plant Propagation (TA220) (1 unit)
Preparation of potting mixes, production of new plant material — techniques, selection criteria.

Project (TA470) (2 units)
Students undertake a supervised research program at their place of employment. Assessment is based on the basis of a properly presented report.

Quality Control (TA452) (1 unit)
Two hours per week for one semester
Assessment, tests and assignments

References
See teacher in charge.

Radioactive Methods (TA456) (1 unit)
Three hours per week for one semester
Prerequisites, Chemistry 2S and Chemistry Laboratory Techniques 2
Assessment, assignments, test and practical work
Legal and safety aspects in use of radioactive isotopes. Applications of isotopes in industry and research and chemical procedures. X-ray diffraction and X-ray fluorescence — instrumentation, experimental techniques and applications.

References
Carswell, D.J. Introduction to Nuclear Chemistry. Amsterdam, Elsevier, 1967
Other references will be discussed in class.

Scientific Photography 1 (TA480) (1 unit)
Three hours per week for one semester
Assessment, assignments and practical work
Theory and practice of basic photography, film processing and printing, densitometry, use of equipment and accessories, colour vs B/W, small-scale lighting techniques, field photography, UV and IR photography, photomicrography.

References
Blaker, A. Handbook for Scientific Photography. USA, Freeman, 1977
Shipman, C. SLR Photographers Handbook. USA, HP Books, 1977

Spectrophotometric Analysis 1 (TA490) (1 unit)
Principles, instrumentation and application of atomic absorption and infra-red spectrometry.

References

Spectrophotometric Analysis 2 (TA491) (1 unit)
Principles, instrumentation and application of atomic absorption and infra-red spectrometry.

References
Willard, H.H., Merritt, L.L., and Dean, J.A. Instrumental Methods of Analysis. 5th edn. N.Y., Van Nostrand, 1974

Statistics (TA144) (1 unit)
Two hours per week — evening only, one semester
Prerequisite, Computations
Assessment, consists of two two-hour exams and two assignments
Theoretical approach and simple applications of statistical methods to design of experiments and various techniques of quality control in industry, including randomisation of sampling.

Reference

*Tissue Culture (TA329) (1 unit)
Sterilisation of equipment, media preparation, culture techniques.
*Typing (1 unit)
Two hours per week for one semester
Preparation of business letters, orders, credit notes, statements, cheques and forms, including figure totals. Mastery of keyboard functions of on-line video display unit — input, editing, hard copy retrieval.

References
See teacher in charge.

Vacuum Techniques (TA458) (1 unit)
Three hours per week for one semester
Prerequisites, Physics Practices 3 and 4
Principles and techniques for construction and operation of vacuum systems. Rotary pumps, oil and Hg diffusion pumps; gauges; ultra-high vacuum techniques; physics of gas discharges; applications to vacuum deposition, thin film optics, graticule techniques, detectors; use of hand torch in vacuum line fabrication.

References
See teacher in charge.

*Vertebrate Zoology (TA448) (1 unit)
Structure and identification of fish, amphibia, reptiles, birds and mammals.

Bridging and Community Access Programs

H51LZA Bridging General Studies

**S51LZC Bridging Science**
Flexible study programs are offered at different levels for students who have left secondary school and who wish to take studies as preparation for entry to tertiary, certificate and TOP courses.

The subjects to be offered are:
- Australian Studies (TH182)
- Biology B (TM192)
- Chemistry B (TM196)
- Communication & Study Skills (TH181)
- Efficient Reading (TH101)
- *English for Academic Purposes (Migrant English)* (TH100)
- Literature (TH170)
- Mathematics B (TM190)
- Physics B (TM194)

*English for Academic Purposes is a subject which runs for 3 hours/week for a semester. It is designed for recent adult migrants who wish to seek entry to TAFE certificates and TOP, or tertiary courses, after completion of the English course.*

S51LZN Special Bridging Program
A bridging program is offered from time to time to meet the needs of special groups in the community. At present the College offers a program, in science, for Vietnamese students who wish to prepare for tertiary and TAFE courses in science and engineering.

Subjects of the program are:
- English M (TH300)
- Mathematics M (TM301)
- Science M (TM302)

H51LDN Reading, Writing and Study Skills
Reading, Writing and Study Skills is a course of 3 hours/week for 12 weeks, and is appropriate for people wishing to prepare for further study. It has been used by students as a preparation for a variety of further courses including studies at colleges of advanced education and universities.

C45LDB Volunteer Tutor Training
Two courses of training are offered. One prepares volunteers to work on a one-to-one basis with adult students who need individual tuition in the basics of reading, writing and spelling. The second prepares volunteers to tutor mildly intellectually disabled adults in life-coping skills.

- Basic Literacy (TR100)
  - 6 sessions, 2 hours/session
- Life Skills (TR106)
  - 7 sessions, 2 hours/session

C45LVP Vocational Preparation Program
Courses will be offered for people who need to sit an examination to enter their chosen career in fields such as nursing, the fire brigade and the armed forces.

C51LDB Basic Studies Program

Individual Learning Workshop (Numeracy) (TR102)
This is a flexible program which gives people who wish to improve their basic mathematics knowledge an opportunity to work individually in an informal learning situation.

English Workshop (TR101)
The subject gives students the opportunity to upgrade their oral and written skills to enable entry into more formal courses. Participants are expected to be able to speak and write basic English before taking this subject.

Volunteer Tutor Program (Adult Literacy) (TR107)
Adult students are matched with an individual tutor for tuition in basic reading, writing and spelling. Students are required to be able to speak fluent English.


**Programs for Mildly Intellectually-Disabled Students**

**C53LZA Work Education Program**

This program is a link program conducted for senior students from Special Schools. Students attend for eight hours per week and study a range of subjects incorporating practical workshop skills. It improves the students' work habits and their level of independence.

**C52LZT Transition Program**

Students attend for three days per week. The program encourages mildly intellectually-disabled adults to develop their practical skills and to improve their levels of literacy, communication and independence.

Subjects offered are:
- Building (TR110)
- Clothing Trade Skills (TR111)
- Electrical (TR112)
- Fitting and Machining (TR113)
- Home Economics (TR114)
- Literacy/Numeracy (TR115)
- Sheetmetal (TR116)
- Typing (TR117)

**C52LZE Vocationally-oriented Evening Classes**

The course provides a range of practical subjects for mildly intellectually-disabled adults. Subjects are offered in conjunction with Box Hill College of TAFE. Classes run in the evening.

Subjects offered are:
- Carpentry (TR120)
- Literacy/Numeracy (TR121)

and the following subjects at Box Hill College of TAFE:
- Clothing Trade Skills
- Electronics
- Home Economics
- Metalwork

**C52LDB Basic Studies Program (Special)**

**Volunteer Tutor Program (Life Skills) (TR108)**

Students are matched with a tutor for tuition in literacy and numeracy related to life-copying skills. It is a program for mildly intellectually-disabled adults.

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**H55LZB Higher School Certificate**

(No prescribed texts. See course description for suggested references.)

(Accounting (TS901)
- Australian History (TH910)
- Biology (TM924)
- Chemistry (TM925)
- Computer Science (TM926)
- Economics (TS903)
- English (TH911)
- English Literature (TH912)
- Human Development and Society (TH913)
- Legal Studies (TS903)
- Mathematics A (TM921)
- Politics (TH914)

**Examinations**

Swinburne is a recognised VISE Examination Centre — exams in all listed subjects will be held at Swinburne under VISE examination regulations as outlined in the VISE Handbook, section 6, pp13-19.

**Enrolments**

The enrolment period will be on 4-5 February, 9.00am to 8.00pm. However, enrolments will be accepted until the start of classes (17 February) if places are still available.

Additional details about HSC Evening Classes and brochures covering information for prospective HSC students are available from:
- VISE Co-ordinator
  42 Wakefield Street
  Hawthorn 3122
  Tel: 819 8385
  and the Information Office, 819 8444

**Further information**

For general information about services available to all Swinburne students, see section ‘General Information’ at the front of this book.

**Higher School Certificate subject details**

**Accounting (TS901)**

**Aims of course**

1. To introduce and examine the function and role of accounting as an aid to management of a business.
2. To introduce, in simple terms, the basis and processes of accounting measurement and to consider the limitations of methods used.
3. To assist students in preparing their future role in the community by providing skills, concepts, relationships, and understandings appropriate to living and/or working in a business environment.

**Reporting method**

Letter grades A-F based on standardised scores.

**Core**

Recording, processing, using and reporting of the effects of financial transactions on a business. Analysing and evaluating alternative accounting methods, concepts, procedures and reports.

**Prescribed texts**

No prescribed texts. See course description for suggested references.

**Assessment**

- 3-hour written examination 50%
- School-based assessment 22%
  - Total for core 77%

**Length of core**

Approximately four hours per week for 20 weeks
Optional units
Topics
1. Funds statements
2. Accounting for partnership
3. Accounting for partnerships (including partnership fund statements)
4. Company accounting — recording and reporting
5. Company accounting — recording and reporting (including company funds statements)
Prerequisite: Topic 1 — Funds statements

Australian History (TH910)
Aims of course
1. To provide students with the chance to study the history of the society of which they are a part.
2. The general aims of history are also central to a study of this subject.

Reporting method
Letter grades A - F based on standardised scores

Core
There are no prerequisites for this course.

Students must select a minimum of THREE topics.

It is strongly recommended that there be some logical relationship between the topics selected. For example, study could focus on related chronological periods or on underlying themes.

Core topics
1. Aboriginal society before European settlement
2. European settlement and the effects on Aboriginal society
3. Colonial society in the early years in NSW and VDL
4. Immigrants and society
5. Political power in Australian society to the 1850s
6. The land hunger
7. Melbourne, the growth of a metropolis
8. Working men and women and social reform 1860-1910
9. The wealth beneath the soil
10. National identity and consciousness 1880 - 1900
11. Federation and the early Commonwealth
12. Australians in wartime — Great War and Second World War
13. The 1920s
14. The Great Depression
15. The growth of the new federal power 1941-1972

Prescribed texts
No prescribed texts. See course description for recommended texts.

Assessment
• 2%-hour written examination 50%
• School-based assessment 20%

Total for core 70%

Length of core/course
Approximately four hours per week for 20 weeks.

Optional units
Topics
A. Funds statements
B. Accounting for partnership
C. Company accounting — recording and reporting
D. Company accounting — recording and reporting (including company funds statements)

Biology (TM924)
Aims of course
This course aims to provide students with some knowledge and understanding of the principles of biology as a science, and the capacity to apply these principles in appropriate biological settings.

Reporting method
Letter grades A - F based on standardised scores

Core
Content
1. The scientific process
2. The organism
3. Function and structure in plants
4. Function and structure in animals
5. Integration and regulation
6. Cellular processes
7. Heredity
8. Continuity and change
9. The human species

Practical
Every student to complete suitable laboratory exercises relevant to each section of the theory part of the course. A minimum of one-third of the total class time should be devoted to such practical work.

Prescribed texts
No prescribed texts. See course description for recommended texts.

Assessment Subject total
1. 3-hour written examination 60%
2. School-based assessment 10%
3. Total for core 70%

Length of core/course
If an optional unit of the Group 1 Biology course is composed entirely of a combination of these topics the following criteria apply to that combination.

1. A student must study at least a minimum of TWO topics.
2. The total time allocation must be a minimum of 40 hours.
3. Topic 1 is a prerequisite for Topics 3 and 5; Topics 2 and 3 are post-requisites; Topics 4 and 6 are alternatives.

Chemistry (TM925)
Aims of course
To provide students with some knowledge and understanding of basic chemistry and how it relates to the world around them.

Reporting method
Letter grades A - F based on standardised scores

Core
Content
1. Atomic theory
2. Chemical reactions
3. Stoichiometric calculations

Additional information
1.1 The nuclear atom
1.2 Electronic structure of atoms
2.2 Chemical reactions
2.3 Stoichiometric calculations
3. Energy
   3.1 Energy resources in human society
   3.2 Transformation of energy by chemical reaction
   3.3 Production of electrical energy by chemical reactions
   3.4 Chemical reactions driven by electrical energy

4. The biosphere
   4.1 Historical development of the periodic table
   4.2 Carbon and silicon
   4.3 Nitrogen and phosphorus
   4.4 Oxygen, sulfur and the metals

Practical
At least 14 hours practical work related to the core to be carried out in the same year as the theory components of the course. Practical exercises must be chosen to fulfil the requirements of section 3.5.1 of the course description.

Prescribed texts
No prescribed texts but the following are strongly recommended:

Assessment
- 3-hour written examination 60%
- School-based assessment 10%
  Total for core 70%

Optional units
   Topics
1. Organic reaction mechanisms
2. Analysis with a purpose
3. Preparative chemistry
4. Surface chemistry — surfactants at interfaces
5. Carbon and silicon polymers
6. From minerals to metals
7. The chemistry of soils
8. Coal chemistry
9. Bauxite to aluminium
10. Chemicals in electric fields

Core
   Content
   The study of each of the following:
   ● Computer structure and data representation
   ● Algorithms and modelling
   ● Programming languages
   ● Data structures
   ● Input/output devices
   ● File structures
   ● System software
   ● Social implications

Prescribed texts
No prescribed texts. See course description for suggested references.

Assessment
- 3-hour written examination 50%
- School-based assessment (practical work) 20%
  Total for core 70%

Length of core/course rules
Approximately four hours per week for 20 weeks

In order to obtain a Grade D or above in this subject, a prescribed minimum standard must be achieved in the practical work (after moderation thereof). This is accomplished by writing sufficient programs of a sufficiently high standard, as described in the course description. A student who does not achieve this standard on the practical work, and whose standardised mark is greater than 49, will have that mark reduced to 49E.

Optional units
   A. Computers in science and engineering
   B. Computers in business and government

Assessment
- School-based assessment 30%

Economics (TM902)
Aims of course
To develop in students sufficient understanding of economic concepts, skills and knowledge to enable them to participate more fully in the decision-making processes of a modern industrial state.

Reporting method
Core
   Content
   A. The Australian Ecosystem including:
      — economic systems
      — the level of economic activity
   B. Economic objectives and performance criteria:
      — price stability
      — full employment
      — external stability
      — economic growth
      — distribution of income
   C. Economic performance:
      — internal and external stability
      — economic growth
      — income distribution
      — compatibility and conflict

Prescribed texts
See course description for detailed list.

Assessment
- 3-hour written examination 70%

School-based assessment (practical work) 20%

School-based assessment 30%

Subject total 70%

Length of core/course rules
Approximately four hours per week for 20 weeks.

If the optional unit of the Group 1 Economics course is composed entirely of these options, then any TWO must be studied.

A. Developing economies
B. Alternative economic systems
C. The nature, extent and alleviation of poverty in Australia
D. Population and capital movements to Australia since 1945
E. The international monetary system since 1945
English (TH911)

Aims of course
1. To extend, deepen and enrich students' experience through reading, discussion and writing.
2. To help students develop further their abilities to deal with points of view relevant to their own experiences and those of others; how to reach such points of view, how to clarify and defend them, and how to evaluate and modify them.
3. To encourage students to pay close attention to the details of language used by themselves and others through active engagement in the four language modes, so that a balance is achieved between speaking and writing on the one hand, and listening and reading on the other.
4. To develop further students' abilities to use writing efficiently as a tool for thinking and communication, employing and experimenting with different forms, styles and conventions of writing in order to express adequately their ideas and experiences.

Assessment
Letter grades A-F based on standardised scores.

Core
All parts are compulsory.
Part 1 — Single text (minimum of 2 books to be chosen)
Part 2 — Thematic study (minimum of 2 books to be chosen)
Part 3 — Essay

Prescribed texts
See annually revised list in VISE circular. Also published as a separate leaflet.

Assessment
- 3-hour written examination
- School-based assessment

Subject total
- 60%
- 10%
- 70%

Length of core
Approximately four hours per week for 20 weeks.

Optional units
A. The play in performance
B. Henry Lawson and the 1890s
C. Women in contemporary fiction and society
D. "Symbols and searchers" — a unit on religious literature
E. Early narrative literature
F. The individual in the nineteenth century novel
G. An introduction to Charles Dickens
H. Twentieth century Australian novels
I. The poetry of alienation

Assessment
- School-based assessment

Subject total
- 30%

Length of optional unit
Approximately four hours per week for 10 weeks.

Home Economics — Human Development and Society (TH913)

Aims of course
To assist students to develop attitudes, appreciations, understandings and abilities contributing to the achievement of satisfying personal, family and community life.

Reporting method
Letter grades A-F based on standardised scores.

Core
Content
The core is comprised of four modules of approximately equal length.

- Module One — Biological aspects of growth and development throughout the life span
- Module Two — Nutrition, growth and development — A life span approach
- Module Three — Socialisation of children within the family
- Module Four — Family resource management

Practical
Practical exercises are a compulsory component of the core. Each practical exercise to be a small-scale systematic inquiry carried out at the appropriate stage of the course. These exercises should, by their nature, indicate that the core has been covered, and by their diversity in methods of inquiry, that a variety of skills has been employed in carrying them out.

No marks are awarded for these exercises. However students who do not complete all eight exercises will not be able to obtain a result greater than 49E for the subject.

Prescribed texts
No prescribed texts. See course description for details of teacher and student references.

Assessment
- 2-hour written examination

Subject total
- 70%

Length of core/course rule
Approximately four hours per week for 20 weeks.

A minimum of eight practical exercises must be carried out.
Optional units
If the optional unit of the Group 1 Home Economics course is composed entirely of these options then any TWO must be studied.
A. Social aspects of food
B. The family in society
C. Independent investigation
D. Cognitive development in children
E. Family health
F. Housing
G. Food management
H. Conserving food resources
I. Advanced nutrition
J. Consumer resource management

Assessment
For total optional unit
- School-based assessment 2 x 15%

Length of optional unit
Approximately four hours per week for 5 weeks.

Legal Studies (TS903)
Aims of course
To provide an understanding of the relationship between law and society, the social function of law, and the position of the individual within the legal system.

Reporting method
Letter grades A-F based on standardised scores.

Core
Content
The core is divided into five sections:
A. Sources of law in Australia
B. The adjudicating and enforcement process
C. The functions of law in Australian society
D. Imperfections in the legal system
E. Changing our law

Each section must be studied; approximately half the time must be given to Sections A and B, in roughly equal proportions, and approximately half the time to Sections C, D and E, in roughly equal proportions.

Optional units
If an optional unit in the Group 1 Legal Studies course is composed entirely of a combination of these topics, the following criteria apply to that combination.
1. A student must study two topics.
2. Any combination of pairs of topics may be chosen.

The optional units are composed of the following allowed combinations of topics.

<table>
<thead>
<tr>
<th>Optional unit</th>
<th>Topic combination</th>
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<tbody>
<tr>
<td>A</td>
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<td>4 2</td>
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<td>F</td>
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Assessment
For total optional unit
- School-based assessment 2 x 15%

Length of optional unit
Approximately four hours per week for 10 weeks.

Mathematics A (TM923)
Aims of course
To develop an understanding of various mathematical concepts and skills. The ability to formulate 'real world' problems in mathematical terms should be given particular emphasis.

Reporting method
Letter grades A-F based on standardised scores.

Core
Content
- Mensuration including three-dimensional problems, prisms, cones, spheres, angles of elevation, sine and cosine rules.
- Probability including combination, permutations, conditional probability, Bayes’ theorem, discrete random variables and discrete probability distributions.
- Functions and calculus including circular functions, sketch graphs, composite functions, differentiation, antidifferentiation applications and definite integral.

Optional units
A. Mathematics of Earth and space
B. Mathematics of growth and decay
C. Computer applications in mathematics

or two of the following:
1. Business applications of sequences and series
2. Statistical sampling
3. Continuous probability distributions
4. Logic and proof
5. Transformation geometry
6. Linear programming

Assessment

- School-based assessment 2 x 15%

Length of optional unit
Approximately four hours per week for 10 weeks.

Politics (TH914)
Aims of course
1. To enable students to develop an understanding of politics based on facts, generalisations, concepts and theories derived from a study of the Australian political system and Australia's place in the world.
2. To enable students to develop and practice a variety of intellectual and work study skills which facilitate an understanding of politics.
3. To develop an empirical, reasoned and humane outlook on social and political behaviour; to encourage a predisposition to responsibility and involvement in political dialogues which are at once effective and respectful of the rights of others; to enable students to reflect on social values as discovered through the study of politics, recognise the values of others and clarify a personal set of values.

These aims could be fulfilled by a study of certain political processes evident in the Australian local and wider regional contexts.

In particular, it is intended that students will:
- develop an understanding of significant aspects of Australian politics and government
- gain an awareness of relevant contemporary events, of the major political dialogues, and the perceptions of the main actors in the political arena
- gain an awareness of the power relationships between individuals, groups, governments and countries as they affect the process of making and enforcing political decisions in Australia
- develop skills of:
  - critical thinking, classifying, conceptualising, generalising, hypothesising, theorising, interpretation and use of evidence
  - reading, listening, viewing, speaking and writing about politics

The course provides the opportunity for students to develop and test their attitudes and values (although these will not be assessed), in particular:
- to develop personal attitudes values to key political theories and concepts
- to develop personal means for sustaining these attitudes values in writing or dialogue
Reporting method
Letter grades A-F based on standardised scores.

Core
Content
Ten core units are provided, six concerned with Australian domestic politics and four with international affairs. Students concerned MUST study a minimum of FIVE of these units.
1. The Constitution
2. Voting and elections
3. Political parties
4. Pressure group
5. Political representation and Parliament
6. Executive government
7. Foreign policy 1901-1945
8. Australia's relations with the USA since 1945
9. Australia and the South-east Asia region 1945-1970
10. Australia, South-east Asia and Papua New Guinea since 1970

Prescribed texts
No prescribed texts. See course description for list of resources.