Please note

The text in this file has been automatically extracted and may contain minor errors. For the original version please consult the paper copy held in the Swinburne Library.
1983 calendar

January

3  SIT re-opens
27  STC re-opens
31  STC course advisers available for consultation

February

1  STC term I commences
2  STC further enrolment period
3  STC further enrolment period
4  Engineering re-enrolments
7  SIT semester 1 commences: second and later year teaching commences all faculties
14  STC new enrolments commence - Round 1
15  SIT first-year teaching commences: Art
21  SIT first-year undergraduate teaching commences: Applied Science, Arts, Business, Engineering
28  SIT first-year undergraduate teaching commences: Engineering

March

14  Labour Day
31  STC last day for enrolling without late fee ($5.00) excluding apprentices

April

1  Good Friday
4  Easter Monday
5  Easter Tuesday
6  SIT classes resume
7  SIT classes resume
15  SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure
25  Anzac Day

May

6  SIT classes end at 9.30pm for vacation
13  SIT classes end at 9.30pm for subject variations to enrolment for Semester I
18  SIT graduation ceremony
23  SIT classes resume
STC term I commences, classes resume

June

1  SIT last day for application for awards for students completing their courses at the end of first semester
10  SIT Semester 1 courses end (except first-year engineering)
13  Queen's Birthday
14  SIT study break (except first-year engineering)
17  SIT examinations commence (except first-year engineering)
20  STC semester I examinations commence (subject to confirmation)
27  SIT examinations commence for first-year engineering

July

1  SIT examinations end (except first-year engineering)
8  SIT examinations end for first-year engineering
11  SIT inter-semester break commences
18  SIT semester 2 commences

August

19  STC term II ends. Classes end at 9.30pm for vacation
26  SIT classes end 9.30pm for mid-semester break

September

5  SIT classes resume
16  SIT last day for amendments to enrolments without penalty of failure
19  STC last day for confirmation of enrolment
21  SIT graduation ceremony
22  Show day

October

31  SIT last day for application for awards for students completing their courses in December 1983

November

1  Melbourne Cup Day
4  SIT formal classes end
7  SIT study break commences
STC end of year examinations commence (subject to confirmation)
14  SIT examinations commence
25  STC examinations end (subject to confirmation)
SIT examinations end

December

12  SIT re-enrolment for 1984 commences (except engineering)
15  STC term III ends
16  SIT semester 2 ends
23  Swinburne closes for Christmas
The information given in this handbook is intended as a guide for persons seeking admission to Swinburne Institute of Technology or Swinburne Technical College and shall not be deemed to constitute a contract or the terms thereof between Swinburne Institute of Technology or Swinburne Technical College 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.
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 Technical College. 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

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 the Council of Swinburne was given power to grant degrees.

The first of these were awarded at a conferring ceremony held on Thursday 21 May 1981 at the 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 tertiary institute offering courses for professional qualifications (diploma and degree of Bachelor) and graduate qualifications (diploma and degree of Master). Enrolments in 1982 were 2,738 full-time and 2,872 part-time students.

Swinburne Technical College — a technical and further education college, offering courses at middle-level or paraprofessional, trade, technical and Tertiary Orientation Program levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1982 were 806 full-time and 4,100 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.

A sports centre offers splendid recreational facilities and a number of other projects are being planned for the future, including an art (graphic design) and film and television complex.

Coat of Arms

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

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

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

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

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

The crest: the demi Boar and the cinquefoil perpetuate the Swinburne connection; the hook 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 1982

President
B.R. Martin, BMetE

Vice-Presidents
W.J. Braden, BA, BEd
N.P. Watson, AASA, ACIS

Members
W.R.S. Briggs, PhD, BSc(Hons), DipChemEng, ASTC, ARACl
W.P. Brown, DipCE, FICE, FIEAust, FIA Aust, MConsEAust
K.H. Clarke, MSc, ARCS, FInstP, FAIP, FACPSM, MIBME
R.S. Davie, BEng(Mech), CEng, FIProdE, FIEAust, MACE
G.W. Fary
A. Grechko (1)
R. Gullan, BSc(Hons), MEng, MACE (5)
F. Hutchinson, TTrIC, TechCert (Electronics) (3)
L.M. Jenkins, BCom, DipEd, FASA, MACE
W.R. Longworth, PhD, MSc, CChem, FRSC, FRACI, FACE
K.M. McGrath, BA, GradDipLib, ALAA (2)
J.P. McLemore, MA, DipEd, MAPsS (4)
K.A. May, BE(Mech), BBSc, GradIEAust (3)
R.N. Morse, AO, BSc, BE, FIEAust
L.E.A. Orton, MARch, DipArch(DSN), LFRAIA, RIBA
A.D. Robinson
M.A. Rose, DipCE, BE, MIEAust
A.P. Stark, DipMechE, TTTC, MIEAust
J.A. Wunderlich, MSc, Dr ès Sc (Paris), ARACl

Chief Executive Officer
W.R. Longworth, PhD, MSc, CChem, FRSC, FRACI, FACE

Secretary
F.G. Bannon, BCom, MSA, ACIS, LCA
(1) Student representative
(2) Non-academic staff representative
(3) Academic and teaching staff representative
(4) Academic Board representative
(5) Board of Studies representative
Senior staff

Director
W.R. Longworth, PhD, MSc, CChem, FRSC, FRACI, FACE

Assistant Directors
RS. Davie, BE(Mech), CEng, FIPPROF, FIEAust, MACE
L.M. Jenkins, BCom, DipEd, FASA, MACE

Principal, Swinburne Technical College
A.P. Stark, DipMechE, TTTC, MIEAust

Vice-Principal, Swinburne Technical College
B.J. MacDonald, BEd, DipEd

Comptroller
F.G. Bannon, BCom, FASA, ACIS, LCA

Registrar
G.L. Williamson, BSc

Dean, Faculty of Applied Science SIT
A.P. Gardner, MSc, DipEd, MRSC, ARACI

Dean, Faculty of Art SIT
I. McNeilage, DipArt, TTTC

Dean, Faculty of Arts SIT
L.A. Kilmartin, MA, MAPsS

Dean, Faculty of Business SIT
M.H. Hunter, BCom, MAdmin, DipEd, FASA

Dean, Faculty of Engineering SIT
L.M. Gillin, PhD, MEngSc, BNetE, ASMB, FIEAust, AMIP

Head, Building Division SIT
G.A. Martin, BA, BEd, MMS, MIEE, MAIB

Head, Business Division SIT
P.Q. Quail, BEd, DipEd, ASA(prov)

Head, Engineering Division SIT
M.M. Katz, BEng(Mech), BEd, DipMechEng, CertElecEng, TTTC, ARMIT, MIEAust, MAIRAH

Head, General Studies Division SIT
G.A. Harrison, BSc, DipMechE, TTTC

Swinburne Librarian
W. Linklater, BA, DiplLib, DipEdTech, ALAA

Head, Computer Centre
M.O. Plunkett, BEng, MACS

Co-ordinator, Student Health and Welfare Unit
M. Algar, BA(HonsPsych), DipSocStud, MAPsS

Head, Education Unit
B. Hawkins, BA, MEd, MACE

Industrial Liaison Officer
F.A.M. Lees, BEngMech, FIIEAust, FIICA

Comptroller's office

Comptroller
F.G. Bannon, BCom, FASA, ACIS, LCA

Accountant
D.F. Baker, AASA, ACIS, RCA

Assistant Accountant
R.N. Devers, AASA

Budget Officer (Acting)
J.A. Sage, DipBus

Maintenance Officer
A.J. Kibble, CBuild, AAIB

Manager, College Press
A.D. McNaughton

Planning Officer
T. Rosauer, BArch, FRAIA, RIBA

Administrative Officer
R.G. Allingham, TTTC, DTSC

Paymaster
D.T. Coutts

Registrar's office

Registrar
G.L. Williamson, BSc

Assistant Registrar
R.T. Dowe, BA, LLB

Administrative Officers
L. Scheuch-Evans, BSc in Foreign Service
H. Ralston, BCom

Information Officer
W.D. Barker

Staff Officer
A.L. Dew, ARMIT

Correspondence Registry
E.A. Black

Admissions and Examinations Officer
M.J. Foley

Faculty Secretaries

Applied Science
J.S. Ure, BSc, DTA

Arts
E.A. Williams, BA, DipCrim

Business
V. Stiles, BA

Engineering
A.J. Miles, BSc, BEd

Swinburne Technical College office

Office Manager
D.T. Barnard, DFM, BCom, AASA(Snr), ACIS, RCA

Assistant Accountant
N.J. Sutton, BBus, AASA

Assistant Registrar
P.E. Cobbs, BEd
Membership of Academic Board

As at 31 August 1982

Ex officio

Chairman
Dr W.R. Longworth (Director)

Assistant Directors
Mr R.S. Davie
Mr L.M. Jenkins

Deans
Mr A.P. Gardner
Dr L.M. Gillin
Mr M.H. Hunter
Mr L.A. Kilmartin
Mr I. McNeilage

Heads of teaching departments
Mr N.J. Allport — Accounting
Mr R.A. Francis — Graphic Design
Dr I.J. Freshwater (acting) — Mechanical Engineering
Mr M.A. Howe — Psychology
Mr G.A.K. Hunt — Computer Studies
Mr R.P. Kavanagh — Mathematics
Mr P.G. Kent — Humanities
Dr I.G. McWilliam — Applied Chemistry (representing)
Mr S.J. Rackham — Physics
Mr B.C. Robinson — Film and Television
Mr J.K. Russell — Manufacturing Engineering
Mr R.B. Sandie — Civil Engineering
Mr R.R. Smith — Social and Political Studies
Dr D.J. Thomas — Economics (acting)
Mr P.F. Thompson — Liberal Studies
Mr R.W. Trelor — Data Processing and Quantitative Methods
Mr B. Warren — Languages
Mr W.T. White — Administration and Law
Mr N. Zorbas — Electrical and Electronic Engineering

Comptroller
Mr F.C. Bannon

Registrar
Mr G.L. Williamson

Swinburne Librarian
Mr W. Linklater

Co-ordinator, Student Health and Welfare
Miss M. Algar

Head, Education Unit
Mr B. Hawkins

Representative, Technical College
Mr A.P. Stark

Representatives, Board of Studies STC (2)
Mrs J. Learmont
Mr P.C. Quail

Representatives, Swinburne Council
Mr W.J. Braden
Mr R.N. Morse

President, Student Union
Mr A. Mahar

Elected members

Faculty of Applied Science (6)
Dr J.K. Jones
Dr P.L. Jones
Mr R.L. Laslett
Mr E.D. McKenzie
Mr T.C. Peachey

faculty of Art (2)
Mr A.M. Evans
Mr E.J.G. Murray

Faculty of Arts (4)
Mr P. Fleming
Mr J.P. McLennan
Mr R. Tanter

Faculty of Business (5)
Mr W.C. Nash
Mr P.J. Pascoe
Mr W.D. Wilde

Faculty of Engineering (8)
Mr F.H. Allen
Mr I.B. Chapman
Mr M.D. Cooper
Mr G.N.M. Gaunt
Mr M. Maj
Mr K.A. May
Mr I.R. Palmer

General representatives
Mr N.R. Garnham
Miss S. Kelly
Mr G.G. Nichols
Mr R.A. Nicholson

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

Student members
Mr S.L. Edwards
Mr S.L.A. Cough
Mr R. Paino
Mr B.I. Wells
Membership of Board of Studies

As at 31 August 1982
Ex officio

Chairman
Dr W.R. Longworth (Director)

Principal
Mr A.P. Stark

Vice-Principal
Mr B.J. MacDonald

Heads of Division
Mr G.A. Harrison — General Studies
Mr G.A. Martin — Building
Mr M.M. Katz — Business

Heads of Teaching Departments
Mrs D.L. Bennett
Mr E.A. Trotter
Mr. P.C. Quail — Business Studies
Mr R. Gullan — Mathematics and Science
Mr E.C. Bird — Plumbing and Mechanical Services
Mr G.N. Williams — Machines and Materials

Office Manager
Mr D.T. Barnard

Swinburne Librarian
Mr W. Linklater

Representatives, Swinburne Council
Mr G.W. Fary
Mr A.D. Robinson

Elected members

Staff representatives
Miss P. Caven
Mr J.F. Gooding

Tertiary representatives
Mr P.A. Evans
Mr B. Warren

Head, Education Unit
Mr B. Hawkins

Co-ordinator, Student Health and Welfare Unit
Miss M. Algar

Education Services Co-ordinator
Dr L.J. Ausburn

Library

Swinburne Librarian
W. Linklater, BA, DipLib, DipEdTech(CNAA), ALAA

Administrative staff
H.J. Sweeney, DipLib, ALAA

Acquisitions
M.F. Mattsson, BA, AssocDipLib, ALAA
C.A. Durward

Audio-visual
B. Jones, BScSc (Lib'ship), ALAA
M. Hawkins

Cataloguing
K.M. Villwock, BA, ALAA
D.J. Doherty, ALAA
J.E. Fizelle, BA(Hons), ALAA
M.D. Larkin, ALAA
C.R. Haskin, BA
H.L. Pitt, BA, AssocDipLib.
J. Farmer, BA(Hons), GradDipLib, ALAA
D.R. Ethell
J. Meggitt

Periodicals
K.M. McGrath, BA, GradDipLib, ALAA
J.A. Loh, BSc, GradDipLib

Readers’ services
P.C. Simmenauer, BA, DipLib, ALAA

Circulation
E. Taylor, BScSc (Lib'ship)

Reader education
B.J. Donkin, DipArts, GradDipEd, ALAA

Reference
J.A. Douglas, BA, MSc

Reference and reader education
P.M. Pettit, MA, GradDiplLib, GradDipEd, ALAA
B.J. Nichol, BScSc (Lib'ship)
B.A. Camfield, BA, AssocDipLib
J.M. Lindner, BScSc (Lib'ship), DipLibInfSc, ALAA
J.M. Ager, BA, DipLib
D. Zakis, AssocDipLib

The reference and lending library is housed in a modern five-storey building with capacity for 650 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 cost. 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 1981 the collection comprised approximately 193,300 items. In addition, 3,186 periodical titles are received, including a wide range of indexes and abstracts. There is a rapidly growing collection of audio-visual material, including records, audio- and video-tapes, slides and films.

Library staff work in close association with teaching staff in developing these resources, and in helping the students by introducing them to a diversified collection of literature and a wide range of media on all types of subjects. Formal and informal instruction is given to students on the use of catalogues, reference works and bibliographical aids both in direct connection with 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, including the semester break, are:

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

Public holidays

Queen’s Birthday
Show Day
Cup Day
Closed on all other public holidays.

During vacations

Mid-semester breaks:
Monday to Thursday — 2.00pm to 10.00pm
Friday — 2.00pm to 8.30pm

Long vacation

Monday to Friday — 9.00am to 5.00pm
Closed between Christmas and New Year, and approximately 3 weeks 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.

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. This period may be extended for a further fortnight 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.

General Information

Overnight loans

Available for: unbound periodicals, including annuals and irregular publications, but excluding display issues, some of the items in the Counter Reserve collection and any other items marked ‘overnight loan only’.

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.

Weekly loans

Audio-visual material (excluding microforms, video-cassettes and slides) and equipment which is not marked ‘not for loan’ may be borrowed for weekly loan.

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.

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 Readers’ Services Secretary. 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 Readers’ Services Secretary. 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 the Library at a cost of $1.00.
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.

Smoking is permitted only in the stair lobbies, level 2 and in those areas clearly marked by notices.

Cigarettes must not be placed anywhere except in the ashtrays provided.

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

An atmosphere of quiet must be maintained in the library so that it is at all times a place conducive to independent study and quiet reading. Silence must be kept in the areas indicated and conversation restricted to the areas set aside for this purpose.

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

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

Power to alter rules

One or more of the rules for general conduct may be changed from time to time by the Director on the recommendation of the Swinburne Librarian.

At the discretion of the Swinburne Librarian one or more of the rules may, under special circumstances, be temporarily suspended. Each suspension shall be reported at the earliest opportunity to the Director and to the Library Committee.

Photocopying

Photocopying machines available to staff and students are located on level one of the library building. Users must note the relevant provisions of the Copyright Act and abide by them.

Swinburne services

Student Health and Welfare Unit

Unit staff

Co-ordinator
M. Algar, BA(HonsPsych), DipSocStud, MAPsS

Counselling
M. Algar, BA(HonsPsych), DipSocStud, MAPsS
J. McGillivray, BBSc(Hons), MPsy, MAPsS
M. Manton, BA(HonsPsych), MAPsS
R. Duff, BBSc, DipTT
M. Rae
C. McClurkin

Counselling
J. Fischer, SRN, SRM

Health
G. Hudson, MB, BS, FRACGP
L. Brazier, SRN, SRM
J. Fischer, SRN, SRM

Chaplaincy
W. Hamilton, BA, DipTheol

Student health and welfare services

The following services are available to all students

Counselling
Health
Employment
Housing
Careers Library
Chaplaincy

These services are administratively co-ordinated into the Student Health and Welfare Unit. Although the chaplain is not formally a part of the unit, he works in close association with it.

Student counselling

Location: room 206, level 2, BA building

Telephone: 819 8025

The 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 decisions and planning, 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 decisions, 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, 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.
**Student health**  
Location: room 207, level 2, BA building  
Telephone: 819 8483  
The health service is available to all students and to staff in emergency treatment.  
The object of the health service is to provide treatment in the case of accidents, sudden and short-term illnesses, medical counselling, a health education program and referral to appropriate sources where necessary.  
The health service is open from 9.00am to 5.00pm; the doctor is available by appointment three hours daily.  

**Student housing**  
Location: top floor, Ethel Swinburne Centre (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 students to share accommodation. Advice on living away from home and the legal and financial problems associated with renting is also available to all Swinburne students.  
The office is open from 9.00am to 5.00pm Monday to Friday, and remains open until 6.00pm by appointment for the convenience of part-time students.  

**Student employment**  
Location: top floor, Ethel Swinburne Centre (above the Cafeteria)  
Telephone: 819 8445  
Assistance is provided for students seeking:  
- vacation employment  
- part-time and casual work  
- 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;  
- a campus interview program where a range of employers visit 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;  
- assistance with job application and interview techniques, individually or in group workshops;  
- personal guidance and support for students in their search for appropriate employment  
The office is open from 9.00am to 5.00pm Monday to Friday, and remains open until 6.00pm by appointment for the convenience of part-time students.  

**Careers library**  
Location: within the Student Counselling Service, room 206, level 2, BA building  
Telephone: 819 8025  
To assist students in their choice of careers and courses, the Careers and Information Counsellor maintains a comprehensive library of information on a wide range of courses at Swinburne and elsewhere: apprenticeships, evening classes, middle-level courses in technical 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.  

**Disabled students**  
Every effort is made to accommodate the needs of disabled students. They are specially catered for and every student with a physical disability or chronic illness is invited to contact the counselling service for more information and assistance.  
Students or staff who are permanently or temporarily handicapped in any way and have difficulty with access to teaching buildings, use of lifts, telephones, cafeteria, etc., should contact the Student Counselling Service, level 2, BA building, or telephone 819 8025.  

**Swinburne chaplain**  
Location: room 206a, level 2, BA building  
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 the institute 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
- 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 1983 the following benefits are available subject to a means test:

- **Maximum living allowance**
  - for dependent students at home: $2,010 p.a.
  - for dependent students away from home: $3,100 p.a.
  - for independent students: $3,100 p.a.
  - maximum allowance for dependent spouse: $2,220 p.a.
  - allowance for dependent child: $520 p.a.
  - Incidental allowance: $30 p.a.
  - Institute students: $70 p.a.
  - Technical College students: $30 p.a.

Applications may be made after enrolment in a course. Pamphlets and application forms are available from the Student Counselling Service or the Commonwealth Department of Education, 450 St. Kilda Road, Melbourne 3004.

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, 450 St. Kilda Road, Melbourne, 3004.

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 Student Counselling Service and teaching departments.

**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 course awards (at universities)
- Postgraduate research awards

Selection for these 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 Student Counselling Service.

**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 their Student Records 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.

Conveyance allowance is applicable only to certain students in the Technical College. Details may be obtained from the Accounts Office of the Technical College.

**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 Student Counselling Service and teaching departments.

**Daydd Lewis Trust Scholarship**

This is available to male students who will be proceeding with degree level study in 1984; this is subject to a means test and certain conditions of eligibility. Value: $2704 to $4212 p.a. Applications close at the end of November.

**Walter Lindrum Memorial Scholarship**

This is available to a student who is qualified to enter the first year of a degree or diploma course. Value: $400 p.a. Applications close 1 November.

**Cowrie Scholarships**

These are available only to members of the Australian Armed Forces who served in a combat area during the 1939/45 war or to their direct descendants. There are (a) postgraduate research scholarships; value: approximately $3500 p.a. for two years, (b) tertiary scholarships; value: $150 p.a. for duration of course. Applications close in October and September respectively.

**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 $53-$99 per fortnight.

**Rotary Educational and Vocational Scholarships for Overseas Study**

These are available to outstanding undergraduate and postgraduate students of the handicapped and to those seeking further experience overseas in technical, artistic or other vocations. Applications close 1 March. Value: covers travel, educational and living expenses for one academic year.
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
Supervisor
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 do not revolve around giving parents free time to pursue their own interests or serving manpower requirements but rather 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. Some of the time is structured, for the older children, but the rest is spent in an open-learning environment where the children engage in free-choice experiences. 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 also members of the community. A sliding scale of fees is in existence.

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

Computer Centre
Manager
M. Plunkett, BEng, MACS
Enquiries
Robyn Hodges
Senior Systems Analyst
Loudes Brent, MSc, AACS
Senior Programmer
R. Schorer, BSc(Hons)
Senior Operator
G. Short
The Swinburne Computer Centre provides computing and data processing facilities for teaching, research and administrative applications. In 1983 three processors will be made available to handle the total workload. All machines are located in the McPherson Engineering Building. The main computer room, H110, houses the FACOM M180(N) and the PDP-11/40 configurations. The M180(N), installed in 1982 is configured with 200 mega-bytes of disc storage, one communications processor, a printer, card reader and two tape drives. Real memory of the central processor in twelve mega-bytes. The system supports an extensive terminal network with VDU’s and hard copy devices distributed throughout 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, SSIU, TWODEPEP, NASTRAN, FORESIGHT, NETCODE) is provided. Software relating to Graphics, General Ledger, Financial Modelling and Data Base is used in several courses.
The PDP-11/40, which has extensive disc space and a network of some twenty-four terminals and dial-up facilities, is primarily devoted to computer-aided instruction.
The third machine is an EAI Pacer 500 which is a hybrid machine, that is, it is both a digital and an analogue computer. Among other features the Pacer 500 has facilities for performing terminal graphics operations.
The Computer Centre is also responsible for the development, maintenance and production of a number of systems used by the administration sector of the Institute. The major applications are Student Records 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 hybrid systems and the different teaching department, maintain their own internal booking procedures to allow access to those terminals. However those users whose work is done in batch mode (i.e. involving card input and hard copy output) submit their jobs to the I/O Centre in room H208 and later collect output from. Similarly any listings initiated by terminal users, which are produced centrally can be collected from H102.
The I/O Centre is open during semesters from 9.00am to 7.30pm Monday, Tuesday and Wednesday and 9.00am to 5.00pm Thursday and Friday.
Assistance to students is provided through a duty programmer service for those problems that cannot be solved by the teaching staff. In addition, seminars are conducted specifically designed to ensure that teaching staff and students use the computing facilities in an efficient and co-ordinated manner.
The Computer Centre produces a number of bulletins throughout the year which are designed to assist students in the use of hardware and software facilities.
Students may, on application to the Centre, be allocated an account and budget for computer facility usage. The allocation controls disk space, input, output and central processor facilities and is determined according to the requirements of the student's course.

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

Telephone: 819 8509

The Centre for Urban Studies

Enquiries: 819 9925, 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 multi-disciplined 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 Local Community Politics and Change and Housing Problems and Policies in South Australia.

More recently, the Centre has become increasingly involved in urban research. The Child in the City research program funded by the Australian Institute of Urban Studies, the Melbourne and Metropolitan Board of Works and City of Prahran is focused on the impact of location and housing, on the lifestyles and activities of youth in inner and outer areas of Melbourne. A study on Youth Housing Policy examines 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, and liaison with visiting fellow, Dr Jack Goodman from the Urban Institute, Washington.

Education Unit

The function of the Education Unit is to assist the teaching and 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

Located in room BA309 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 audioduplicating, 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 video-tape recorders and other audio-visual equipment.

Head, Education Unit

B. Hawkins, BA, MEd, DipEd, MACE, 819 8384

Education Officer (educational technology)

K. Anderson, MA, BSc, DipEE, MilAust, MACE, TTIC, 819 8384

Education Services Co-ordinator

L. Ausburn, PhD, MA, BSc, SecTeachCert, MACE, AECT, 819 8355

Audio-visual

Officer-in-charge

D. McAdam, BA, 819 8010

General enquiries 819 8031

Information Office

Information Officer

W. Barker, 819 8460

Schools Liaison

L. Norris, 819 8388

General enquiries 819 8444

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

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

Literacy/Numeracy Compensatory Unit

Individual assistance is available to all students of the college who are experiencing any difficulties in coping with their courses of study due to problems of understanding, or lack of appropriate skills, in English and Mathematics.

A range of programs for any adult in the community who wishes to become involved again in learning, is also available from this unit. There are no entrance or age qualifications, or fees.

The Literacy/Numeracy Compensatory Unit is housed at 44 William Street. Students are encouraged to discuss their own special needs in Mathematics and English with staff members at 44 William Street.

Co-ordinator

Miss Jeanette Learmont, 819 8816
Student parking

General inquiries
D. Janichen, 819 8382

Student Union, 819 8520

Limited car parking facilities are provided for all part-time and full-time students. No charge is made, but a 1983 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 front 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

The student union, as the name suggests, is a union of students who attend Swinburne. It has many responsibilities:

(1) Implementing policy decided on by a general meeting of the students.
(2) Providing varied services to students
(3) Protecting and maintaining the rights of students.
(4) Representing students on Swinburne committees
(5) Raising political issues on campus

There are many other duties for which the student union is responsible, many of which are flexible and arise as needs demand.

All students have the same rights in respect to the union and all are entitled to use the services provided by it.

Some of these are:

Clubs and societies

Many clubs and societies are in operation providing a wide range of activities for students. Clubs active in 1981 included:

Photographic Society
Explorers Club
Swinburne League of Business Studies (SLOBs)
Overseas Students Service (OSS)
Italian Club
Folk and Blues Club
Jewish Students Club
Environmental Health Society
Chemical Engineering Society
"Wimmin’s” Group

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 Technical College 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.

Swinburne Applied Research and Development Division (SARDD)

Executive Officer
F. Lees, B MechE, 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.

Swinburne Student Bookshop

Manager
R. Wilkens, 819 8225

This bookshop has been established for the benefit of all students and staff. The aim 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 Buildings, John Street. Entrances are from John Street and from the cafeteria quadrangle.

The bookshop provides cheaper books and articles for student use.
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.

Fly Dirt is the monthly newspaper of Swinburne students. Fly Dirt 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.

The orientation handbook is compiled every year for new students, providing them with basic information necessary to make the most of their stay at Swinburne. Information on student facilities, the various sporting clubs and societies, and other general information is provided.

Union shop
The union shop provides a range of articles at cut prices including cigarettes, confectionery, hot and cold drinks, hot take-away food, chemist’s items, and film processing at thirty per cent discount.

Activities centre
This centre is housed in the building at the corner of John Street and Burwood Road. The Activities office will be open between 10am and 6pm and students will be able to borrow various types of games, e.g. checkers, chess, backgammon, etc., and relax in the lounge.

There is also a part-time and mature-age students lounge specifically set aside.

A current list of ‘What’s on!’ around Melbourne will be available from the Activities officer.

Legal advice
The student union also provides a free legal aid service for students, where information about the law and legal advice can be sought.

Education Research Officer
The Education Research Officer provides a liaison between students and staff on education matters ranging from course content and assessment to time-tables and work load pressures. In particular, the Education Research Officer is appointed to ensure that students have an avenue for complaints which can be acted upon.

Sports Association
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 two squash courts, a very well equipped weight-training gymnasium and table-tennis facilities. The aim of the Association is to introduce students and staff to recreational sports such as SCUBA diving, sky diving and water skiing, and at the same time continue to develop the interest of students in the more traditional sports of football, soccer, tennis, etc.

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.

In addition to the above sports, there are several other clubs which arrange activities, trips and competitions. These include the following:

**Car**
Regular car rallies, motorkhanas, hill-climbs, sprints, films and social evenings.

**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.

**Modern movement**
Classes weekly for both men and women.

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

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

**Sky diving**
Classes for beginners and regular weekend jumps, equipment available.

**Snow skiing**
Midweek and weekend trips to Holham, Buller and Falls Creek during the midyear break. Weekend trips during second semester. Ski hire arranged by the club.

**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 subsidises ten-pin bowling and golf, at the Golden Bowl and Yarra Bend respectively. It also operates a sports store which sells a complete range of sporting goods at discount prices and a travel department which handles both domestic and international travel.

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

**Telephone:** 819 8018.
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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
- Biochemistry
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics

**Bachelor of Arts (BA)**
- Graphic Design

**Bachelor of Arts (BA)**
From 1983, students completing a Bachelor of Arts degree may combine any two of these approved majors:
- Economics
- Historical and Philosophical Studies
- Italian
- Japanese Literature
- Media Studies
- Political Studies
- Psychology
- Sociology

A double major may be taken in Political Studies or in Psychology.

**Bachelor of Business (BBus)**
- Accounting
- Applied Economics
- Data Processing

**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**

Associate diplomas
Associate Diploma in Private Secretarial Practice (AssocDipPS)
Associate Diploma in Production Engineering (AssocDipProdEng)

Postgraduate

Degree of Master
Programs (by research and thesis) leading to the degree of Master can be undertaken in a number of areas:

**Master of Applied Science (MAppSc)**
- Applied Chemistry
- Biochemistry
- Biophysics
- Computer Science
- Instrumental Science
- Mathematics

**Master of Arts (MA)**
- Psychology
- Graphic Design
- Humanities
- Languages
- Social Sciences

**Master of Business (MBus)**
- Accounting
- Applied Economics
- Data Processing

**Master of Engineering (MEng)**
- Civil Engineering
- Electrical Engineering
- Manufacturing Engineering
- Mechanical Engineering

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
- Civil Engineering Construction
- Computer Simulation
- Corporate Finance
- Digital Electronics
- Energy Systems
- Industrial Management
- Industrial Microbiology
- Japanese
- Maintenance Engineering
- Management Systems
- Manufacturing Technology
- Organisation Behaviour
- Scientific Instrumentation
- Telecommunication Systems Management
- Transportation Systems
- Urban Sociology
- Urban Systems
Entrance requirements and application procedure

Undergraduate

Entrance requirements

1. The criteria for entry to a tertiary course at Swinburne Institute of Technology are and always have been, the ability of the student to undertake the chosen course.

2. Swinburne is committed to flexibility in entry requirements and opposition to any lowering of standards for entry to its tertiary courses.

3. Swinburne recognises VISE Group I subjects.

In general, recent school leavers should have achieved Grade D or higher in four Group I subjects including English in one year. A ‘score’ will be computed from the standardised marks obtained in those subjects, as one factor in selection.

It is not mandatory for students to have achieved all passing grades referred to above in the one year. Where applicants have taken more than one year, their background and results will be taken into account.

4. Swinburne is presently considering the details of Group 2 subjects before determining whether they are appropriate for admission purposes.

5. Swinburne recognises Tertiary Orientation Program subjects and will continue to admit students who have completed satisfactorily an accredited Tertiary Orientation Program.

6. Swinburne recognises Year 12 subjects taken in other states where these subjects are recognised by universities, colleges of advanced education or equivalent institutions in those states.

7. A special entry scheme for mature-age applicants (MD's) for people who may not have the usual secondary school qualifications. This is subject to quota restrictions and to the result of an individual assessment of the applicant's abilities, motivation and potential.

8. Swinburne does not specify prerequisite (mandatory) subjects for entry to its courses, however, for the guidance of potential students, some faculties list ‘recommended’ subjects.

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 1983 Students.

Form E

For all other applicants. Copies of the form, and the Guide for Prospective 1983 Students in which it is enclosed, are obtainable from VUAC.

Special provisions

Swinburne Technical College students

Tertiary Orientation Program

Students who undertook the Tertiary Orientation Program at Swinburne Technical College in 1982; who completed their Year II studies at an eastern metropolitan region technical school in 1981 and who intend to apply only for a course of study at Swinburne, should apply directly to the faculty concerned. Students in this category who intend to apply for courses other than or in addition to those offered at Swinburne Institute of Technology, must apply through VUAC.

Tertiary Orientation Program students other than those in the category mentioned above should consult the Head of the Division of General Studies, Swinburne Technical College, with regard to application procedure.

Mature-age entry

Applications for all courses except Arts must be made to the Registrar on a Swinburne application form. Applications for entry to courses offered by the Arts Faculty must be made through VUAC.

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:

<table>
<thead>
<tr>
<th>Course</th>
<th>Closing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Art</td>
<td>19 November 1982</td>
</tr>
<tr>
<td>Arts*</td>
<td>26 November 1982</td>
</tr>
<tr>
<td>Business</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Engineering*</td>
<td>14 January 1983</td>
</tr>
</tbody>
</table>

*Further applications will be received after this date if places are available.

Part-time

Part-time courses are offered in all faculties except Art

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

Closing dates for part-time places should be received by:

<table>
<thead>
<tr>
<th>Course</th>
<th>Closing Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Arts*</td>
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</tr>
<tr>
<td>Business</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Engineering*</td>
<td>14 January 1983</td>
</tr>
</tbody>
</table>

*Further applications will be received after this date if places are available.

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

Students who are offered a place in first year for 1983 may apply for a deferment until 1984. 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 the end of October, 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 a charge of $1500. This charge will be levied by the Commonwealth Department of Immigration and Ethnic Affairs and not by Swinburne.

Postgraduate

Entrance requirements

Applicants for admission to postgraduate courses 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 position or experience indicates an ability to benefit from the course.

Requirements for specified courses are set out in the various faculty handbooks.

Application procedure

All applications for enrolment in postgraduate courses must be made directly to the institute. Application forms are obtainable from the Admissions Officer, 819 8386.

Applications for admission to postgraduate courses should be received by:

<table>
<thead>
<tr>
<th>Course</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Science</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Art</td>
<td>19 November 1982</td>
</tr>
<tr>
<td>Arts*</td>
<td></td>
</tr>
<tr>
<td>Applied Social Psychology</td>
<td>29 October 1982</td>
</tr>
<tr>
<td>Urban Sociology</td>
<td>26 November 1982</td>
</tr>
<tr>
<td>Business</td>
<td>14 January 1983</td>
</tr>
<tr>
<td>Engineering</td>
<td>14 January 1983</td>
</tr>
</tbody>
</table>

*Further applications will be received after these dates if places are available.

Awards

Students nearing completion of their courses

Students nearing completion of their courses may obtain a statement indicating those subjects passed and those subjects required to complete their courses. Fee $5.

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.

Applications for degree and diplomas

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

Requirements for specified courses are set out in the various faculty handbooks.
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 change of subject enrolments in a student's course of study.
Abandonment means the discontinuation of enrolment without formal notification. Abandons has a similar meaning, unless the contrary intention is expressed.

Conditions of enrolment
Enrolment at Swinburne Institute of Technology is conditional upon:
the information which is supplied by the applicant to the institute upon which an offer of a place in a course is based, being accurate;
the approval of the head of the awarding department (or his 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 any prescribed tuition fee (unless exempt);
the lodging of all documents required by the Registrar at the Cashier's Office or the Student Records 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 1983 had not been determined. As a guide those for 1982 were:
Full-time students more than one semester academic $53.00
Full-time students at least one semester work experience $34.00
Part-time students $26.50
For all institute purposes a part-time student is one enrolled for subjects which require a total 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
Art (Graphic Design) degree 3rd year
Civil, Electrical and Electronic, and Manufacturing Engineering degrees 3rd and 4th 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); of $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 tuition fee (if applicable) and the General Service Fee.

Refund of fees
Late 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 Records Office, administration building, prior to 31 March, 1983.
No later VUAC offer
A student who with draws 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 Records Office, administration building, prior to 31 March 1983.
No refunds of fees will be made where a student withdraws from study after 31 March 1983.
No refunds of fees will be made under any of the provisions set out above unless the student returns to the Swinburne Library with the notice of withdrawal, his or her 1983 student identity card.
Confirmation of Institute records

The Institute recognizes 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 notify the Student Records Office of any errors existing in the records will be required to pay a substantial fee ($5.00 or part thereof per amendment required) for each amendment to be made after the closing date for enrolment files.

Amendments to enrolments

Amendments to course or subject
Within the Institute rule a student may withdraw from a subject or unit without penalty of failure:

- for subjects concluding at the end of the first semester, up to and including Friday 15 April 1983
- for subjects concluding at the end of the second semester, up to and including Friday 16 September 1983

Result of fail
After that date any withdrawal will result in a fail being recorded except with the prior approval of the Dean.

Permission to withdraw required
Any withdrawal after the dates set out above will be made only where special circumstances exist and the amendment is approved by the Dean of the faculty concerned, and the Registrar, and a processing fee of $20.00 per subject has been paid.

Addition of subjects
No subject may be added to a student's record without the approval of the awarding and the teaching departments.

After 15 April 1983 (for subjects concluding at the end of the first semester) or 16 September (for subjects concluding at the end of the second semester) the amendment will be permitted only where special circumstances exist and the amendment is approved by the Dean of the awarding faculty and the Registrar and a processing fee of $20.00 per subject has been paid.

Leave of absence
Students who have enrolled in a course and who wish to take leave of absence should apply on an Amendment to enrolment form.

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 automatically.

The rule set out in the clause relating to 'Procedure' under 'Amendments to enrolments', applies to leave of absence sought after the dates specified in that clause.

Withdrawal from all study
A student who intends to withdraw from all study must lodge an Amendment to enrolment form to indicate this intention and return his or her identity card.

The rule set out in the clause relating to 'Procedure' under the 'Amendments to enrolments', applies to withdrawal from all study after the dates specified in that clause.

A student who abandons all study will be recorded as having failed all subjects and units for which he or she was enrolled.

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 Records 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
All students enrolling or re-enrolling at the institute will be issued with a 1983 identity card.

Initial issue will be from the Library enquiries counter

These are not transferable and are valid only when signed. A current card must be produced when borrowing or photocopying, otherwise service may be refused.

A student who loses his card should:

a) notify the Reader Services Librarian as soon as possible after discovery of the loss as the card holder may be held responsible, under library rules, for any transaction on his or her card up to the time of notification of the loss.

b) apply to the Reader Services Librarian for the issue of a replacement card (cost $1.00).

A student who wishes to withdraw from, or take leave of absence from, his or her course must return the card to the Swinburne Library.
Assessment regulations

Preamble
The aims of these regulations are to safeguard academic standards, to ensure that assessment relates to the objectives and content of the courses taught, to enable students to have reasonable redress in cases where they may feel that an injustice has been done, and to ensure the prompt approval and accurate documentation of all results.

The Academic Board believes that a variety of forms of 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 such responsibility is taken at the faculty level.

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

Chief Examiners
The Chief Examiner is the Director of the Institute. Responsibilities of Chief Examiner are, for the time being, delegated to the dean of each awarding faculty.

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.

Examination 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 of 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 and 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
means a panel of members of the academic staff of Swinburne Institute of Technology established under section 4 of these regulations.

Student Records Office
is the room AD109 in the Administration Building

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

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

21
For the purpose of these regulations the main functions of assessment are:

211
The facilitation of learning which includes such matters as:
— helping to establish learning situations appropriate to the needs, abilities and potentialities of the individual student;
— enabling the diagnosis and alleviation of specific learning difficulties;
— motivating and directing learning experiences;
— developing and maintaining skills and abilities.

One of the most effective ways of facilitating learning is to provide the student with ‘feed-back’, 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.

212
The certification of the level of achievement which students have reached in subjects and/or courses at Swinburne Institute of Technology;

213
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:

3.1.1 examination at the conclusion of the duration of the subject;

3.1.2 formal or informal tests conducted at any time from the commencement of the subject to the end of the examination period designated under these regulations;

3.1.3 assignment, project work, field work, essay, report or such other activities as the subject panel shall see fit.

Subject Panels

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

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

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

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

4.5 The panel shall, subject to these regulations:

4.5.1 After consultation with the head of the teaching department:

4.5.1.1 determine, prior to the issue of the first test or assignment or test for the subject of the year, the form or forms of assessment to be used.

4.5.1.2 determine the assessment categories to be used for the particular year.

4.5.2 Ensure that each panel member and each person teaching the subject is familiar with the content and objectives of the subject.

4.5.3 Ensure that all students enrolled in the subject are informed of the procedures for assessment and allocation of marks for the subject prior to the issue of the first assignment or test for the subject for the year.

4.5.4 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.

4.5.5 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, in writing, of any subject for which pass/not pass results only, as provided hereunder, are to be used for the year or semester;

4.6.2.1 by 1 May for a subject for which the final result is determined (irrespective of when the result is published) at or prior to the end of the first semester; or

4.6.2.2 by 1 September for a subject for which the final result is determined after the end of the first semester.

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 are 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;

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.
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 later than nine weeks prior to 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.

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

5.4 No minimum attendance requirements will be demanded of a student who is duly enrolled in a subject:
(a) as a prerequisite to that student being permitted to sit for an examination; or
(b) as a prerequisite to that student obtaining a passing grade in that subject;

It is within the power and responsibility of a subject panel to set minimum standards of work which a student must reach or specific requirements which a student must complete in order to be notified to a faculty board as a pass in the subject.

6. Examination

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

6.2 Timetables

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

7.1 Result categories

7.1.1 The following assessment categories only may be used to record a student's performance in a subject:
- High distinction (HD)
- Distinction (D)
- Credit (C)
- Pass: (P)
- Not pass: (N)

7.1.2 Where it is not appropriate for results in a subject to be issued through the full range of categories authorised by these regulations, two categories only shall be used:
- Pass: (P)
- Not pass: (N)

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

7.1.3 The following notations are applicable in special circumstances:
- Special exam (SPX)
- Deferred (DEF)
- Continuing (CON)
- Exempt (EXM)

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

7.2 Processing results

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

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

7.2.1.2 Such statistics as are required by the Head of department and faculty board;

7.2.1.3 A signed subject report in a form approved by the awarding faculty board, including:
   - (a) certification that these regulations have been carried out;
   - (b) 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;

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 Records 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 Records 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
   - i in those subjects in which enrolment will normally extend for more than one year,
   - ii in cases where a result is determined on submission of a report or thesis, and
   - iii 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 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 Records 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 Institute library or who has failed to pay any fine or imposition relating thereto, or who has any other outstanding commitment to the Institute, after notice to that effect had been posted by the Registrar to the student at the address most recently recorded in the Institute records for the particular student.

7.6 Reports

Any student may, on application to the Student Records Office within 30 days of the publication of the result of assessment for a subject, and after payment of the fee prescribed, obtain a report on any material formally assessed as follows:

- a statement showing marks gained for each question or part of question
- a detailed report by the examiner

Fees for such reports shall be determined from time to time by the Director.

7.7 Alteration to results

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

Where an alteration to examination result, other than finalising a result for which an extension of time to complete has been granted under section 7.3.3 or 8.4, is submitted more than two months after publication of the original results, the alteration must be approved by the awarding faculty board before the Alteration to Result form is forwarded to the Student Records Office and the approval of the awarding Faculty Board obtained.

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 Records Office not later than mid-day 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 Records Office not later than mid-day 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 convenor advised.

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

8.4 Any extension of that period must have the prior approval of the Dean of the awarding faculty who shall fix an alternative date by which the special examination must be finalised.

Details of the extension granted shall be notified to the next meeting of the faculty board.

8.5 The subject convenor 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 Records Office and the Faculty Board.

8.6 The Student Records 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 Records Office not later than mid-day on the third working day after the conclusion of the day of the examination. Where no examination is held application must be made before the end of the first week of the examination period.

No application will be considered after the publication of results.

11. Appeal

Any student or group of students has the right of appeal to the Head of the appropriate teaching department about any aspect of the assessment procedure in any subject.

Swinburne Centres

Swinburne Applied Behavioural Studies Centre
Chairman
M.A. Howe, Department of Psychology, 819 8203
Established in 1977, the Swinburne Applied Behavioural Studies Centre is an interdisciplinary group with its administration based in the Department of Psychology, Faculty of Arts. The centre acts as a focus for organisations and people seeking psychological and behavioural services, such as research, consulting and training of staff in appropriate areas. From time to time workshops are held dealing with topics such as survey research interviewing and interpersonal skills training.

Centre for Applied Colloid Science
Co-ordinator
J. Ralston, 819 8862 or 819 8179

The Centre was established in 1980 for the development of applied research and contact research in applied colloid science. It provides an access for its subscriber companies or organisations to make use of the sophisticated equipment and other resources for the investigation of problems in this field.

The Centre promotes the teaching of applied colloid science at both undergraduate and postgraduate levels and through short courses. It also operates as a contact point for visiting members of staff from other academic institutions, companies or government authorities, both local and overseas.

Visitors frequently give lectures and discuss research activities which prove most advantageous to students at undergraduate and postgraduate levels as an integral part of their training. Some of the work undertaken inevitably involves the development of equipment or processes which may be patented.

Centre for Industrial Democracy
Interim Chairman
G.C.J. Morison, Department of Liberal Studies, 819 8067
Interim Secretary
R.F. Cother, Department of Manufacturing Engineering, 819 8372.

The Centre was established in 1982 to provide an advisory and referral service to commercial enterprises and any other groups who intend to incorporate aspects of industrial democracy.

It will become a clearing house for industrial democracy issues; papers will be published occasionally; seminars and workshops will be organised and it will be part of a statewide and interstate network of agencies which provide these facilities.

Science Education Centre
Chairman
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.
Academic staff .................................. AS2
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Faculty of Applied Science

Dean
A.P. Gardner, MSc, DipEd, MRSC, ARACI

Faculty Secretary
J.S. Ure, BSc, DTA

Department of Applied Chemistry

Head
A.P. Gardner, MSc, DipEd, MRSC, ARACI

Principal Lecturers
I.K. Jones, PhD, BAgSc, DipEd
R.L. Laslett, MSc, DipEd, ARACI
I.G. McWilliam, DSc, FRACI, MASlA

Senior Lecturers
W.L. Baker, BSc(Hons), PhD, MPS, ARACI, TTC
I.C. Bowater, PhD, BSc(Hons), DipEd, ARACI
P.J. Havlicek, BSc, MSc, DipEd, ARACI
I.G. McWilliam, DSc, FRACI, MASlA

Lecturers
E.F. Carter, BA, MSc, DipEd
R.F. Cross, PhD, BSc(Hons), DipEd, ARACI
J.V. Culka, PhD, BSc(Hons)
J.W. Davis, DipPhI, MAIHS, MSc
J.M. FitzGerald, PhD, BSc(Hons), PhD, MPs, AASM
J.J. Michel, PhD, BSc(Hons), DipEd, ARACI
R.G. Morris, DipPhI, MAIHS
M. Natarajan, PhD, MSc
J. O’Connor, MSc, ARMIT, BA, ED, ARACI
M.E. Redwood, PhD, BSc(Hons), ARACI
G.G. Rose, PhD, BSc(Hons), ARACI
M.J. Scarlett, PhD, BSc, DipEd

Senior Tutors
D. Atkinson, PhD, BSc(Hons), ARACI
B. Buchanan, BSc, TSTC
E. Durre, BSc, DipEd
J.V. Fecondo, BSc(Hons)
D.A. Wyatt, PhD, MSc, FGIS

Instructor
P.J. Kelly

Department of Computer Studies

Head
G.A.K. Hunt, BA, DipAppChem, MBCS

Lecturers
J.R. Alonso, MSc, GMChemE, ARACI, AIChe, ACS, MIE Aust, EIT, PE
G.P. Martin, PhD, MSc, MIEE, MACS
I.M. Smith, BSc(Hons), DipEd, MAV

Senior Tutor
P. Reid, BEng

Department of Mathematics

Head
R. Kavanagh, MA, MSc, MASOR, MORS

Principal lecturers
A.K. Easton, PhD, MSc, DipT, FIMA
P.A. Evans, MSc, DipEd, MASOR
J.R. Jacono, MSc, BA, TTC

Senior lecturers
N. Garnham, MSc, DipEd
P.H. Green, BA
W. O’Dell, BA, DipEd, MASOR, MSSA
J.F. Pidgeon, BA, DipEd
C. Scott, MSc, BA, BSc, ATT(Cert)
H.V. Yeo, BA, TTC

Lecturers
C.R. Barling, MSc, DipEd
S.R. Clarke, BSc(Hons), BA, DipEd, MSSA
E.P. Hausler, MSc, DipEd, TTC
J.C. Herzel, PhD, MSc, BA
M.N. Hunter, MSc
P.L. Jones, PhD, BSc, DipEd
T. Peachey, BSc(Hons)
B.R. Phillips, MSc(SocSci), BSc, BEd
P. Robb, BA, MSc, TSTC, MACS
J. Steiner, PhD, BSc(Hons)

Senior tutors
G. Francis, BSc(Hons)
D.C. Mainwaring, MSc
J. Yearwood, MSc
P. Zeephongsekul, BSc(Hons)

Department of Physics

Head
S.J. Rackham, MSc, BEd, FRMTC, FAIP, TTC

Deputy head
C.G. Sibley, BSc, DipEd

Senior lecturers
E.D. McKenzie, MSc, CertEd, MAIP, MARPS
R.B. Silverstein, PhD, BSc(Hons), MAIP, MIBME, MACPSM

Lecturers
P.S. Alabaster, PhD, MSc, MAIP
J. Hennessy, BSc, DipMet, MAIP, TCert
D. Lamble, BSc(Hons), DipEd, MAIP
J.M. Venema, BSc, BA, DipEd, TTC
D. Ward-Smith, PhD, BSc(Hons), MAIP
A.M. Williams, MEngSci, MIBME
A.W. Wood, PhD, MSc

Senior Tutors
P.J. Cadusch, PhD, BSc(Hons)
R.G.D. Roberts, MSc, DipEd, DipT
Applied Science courses

Degree of Bachelor of Applied Science
The full-time degree courses are programs of cooperative education which extend over seven semesters (three-and-a-half years) and include two semesters of work experience. They comprise two major studies chosen from applied chemistry, biochemistry, biophysics, chemistry, computer science, instrumental science and mathematics. Students spend a total of twelve months gaining professional experience in industry, business, clinics 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 (Applied Chemistry)
Diploma of Applied Science (Biochemistry)
These diploma courses are being phased out. No new students will be accepted but students already enrolled may continue their courses.

Diploma of Applied Science (Environmental Health)
This course is the only recognised training for health surveyors in Victoria and is available for both full-time and part-time study. The full-time course extends over seven semesters (three-and-a-half-years) and includes two semesters of work experience. Part-time students can complete the academic work of the course over a five-year period, and are required to arrange for and undertake one year’s relevant work experience during this period.

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 and the diplomas in applied chemistry and 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 Association of Physical Scientists in Medicine as satisfying the academic requirements for membership.

The course leading to the diploma in applied science (environmental health) is recognised by the Commission of Public Health 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, power generation, etc.

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 mathematician/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**

The applied mathematics of probability theory is used whenever numerical data arise in business, scientific, economic or industrial investigations, and a major in mathematics provides valuable experience for potential statisticians, computer programmers, operations research or quality control experts.

Specialist mathematical skills are required in the solving of problems which arise, for example, in medical research, building research, animal health, poultry research, forest products, fisheries, metrology, food preservation, wool research or protein chemistry. Statistical skills are also used in the designing of trials such as those to study the effectiveness of various fertilisers or fcoders and in assessing the effectiveness of, for example, traffic control, insecticides or new drugs.

The completion of a mathematics major is necessary in order to become a fully qualified science/mathematics teacher.

**Health Surveying**

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, the State Rivers and Water Supply Commission and the Dandenong Valley Authority. Opportunities also exist in other state and federal departments.

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

Opportunities also exist in industry, particularly the food industry, where health surveyors assist with quality control work and in complying with health and pollution laws. The number of these opportunities is increasing.

**Entrance requirements**

**Degree in Applied Science**

Standard entry to the first year of the degree course requires satisfactory completion of a year twelve (sixth form) course of study in a Victorian secondary school, or its equivalent. It is recommended that students should have studied English, chemistry, physics, pure mathematics and applied mathematics.

Students who complete satisfactorily the Science/Engineering course of the Tertiary Orientation Program offered by Swinburne Technical College are given preferred entry to the first year. This course comprises English, chemistry, physics, science/engineering mathematics and concepts of mathematics. Students who have studied other Tertiary Orientation Program subjects are considered for entry on their merits.

The Tertiary Orientation Program is designed specifically to prepare for tertiary entry. Students who have passed the Technical Leaving Certificate of fifth form in English, mathematics, physics and chemistry.

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

Standard entry to the first year of the course requires satisfactory completion of a year twelve (sixth form) course of study in a Victorian secondary school, or its equivalent, or other evidence of capacity to succeed in the course. A background of chemistry, physics and mathematics is recommended but knowledge of these subjects at HSC level is not assumed.

**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 standard entry qualifications.
Mature-age entry
Special provision is made whereby mature-age applicants may be accepted to the first year of the undergraduate courses with less than the normal entry prerequisites. This provision applies to persons who are in regular and relevant employment, but not to students who have recently failed the HSC examinations.

Applicants in this category 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 will be made on the merits of particular cases.

Admission with advanced standing
Certain subjects passed at another institute, or at a university may provide advanced standing in the above courses. Each application will be 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 individually considered 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, undertake a project and write a thesis (SC404).

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 $20.00. 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 re-approval 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 (i.e., 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 displayed on the faculty notice board early in each semester.

The Applied Science Faculty Board operates a scheme of passing by years or semesters which applies to all students enrolled in full-time and cooperative undergraduate courses, and to all students enrolled in part-time undergraduate courses arranged in the standard format.

Under this scheme the Board, in assessing a student's performance, considers the results obtained in all subjects and decides whether or not the student has passed on the year's work.

Results are released in December for all first-year students, all students of the diploma courses in Applied Chemistry and Biochemistry, and all students of the part-time diploma course in Environmental Health. For all other undergraduate students, results are released at the end of each semester.

Subjects are assessed and results issued in the following assessment categories:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>High Distinction</td>
</tr>
<tr>
<td>D</td>
<td>Distinction</td>
</tr>
<tr>
<td>C</td>
<td>Credit</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
</tr>
<tr>
<td>N</td>
<td>Not Pass</td>
</tr>
</tbody>
</table>

The student's overall progress during the year (or semester) is assessed, and issued as a faculty result in the following categories:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pass; where the student has passed all subjects undertaken.</td>
</tr>
<tr>
<td>FP</td>
<td>Faculty pass; where the student has failed one or more subjects but is considered by the Board to merit an overall pass (normally a weighted average result is calculated using the product of the subject assessment value and the formal contact hours for each subject, and where this average result has a pass value, a faculty pass is granted).</td>
</tr>
<tr>
<td>N</td>
<td>Not pass; where the student is not permitted to proceed to the next stage of the course.</td>
</tr>
</tbody>
</table>

Unsatisfactory performance
(a) Failed students may be permitted to repeat the year's (or the semester's) work as full-time students. If the repeat year of semester is failed students may continue study only as part-time students.

(b) Failed students may be permitted to enter part-time study in order to rehabilitate themselves and will be permitted to retain credit for subjects passed and re-admitted to full-time study at such time as they become capable of entering a full-time year (or semester) without carry-over of subjects from an earlier year (or semester).
Cooperative education

In the applied science faculty, the degree courses and the diploma course (environmental health) 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 may 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.

Faculty of Applied Science Prizes

Eric Bode Prize

A bronze plaque and a prize 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.

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.

The A.F.E. Tylee, the J. Smith Memorial and the K. Kennewell Memorial prizes

These are awarded in the fields of social science and mathematics.

Course details

All students studying for a degree undertake a common first year of compulsory subjects which must be completed before enrolling for any later year subject. The common first year is also available for part-time evening study over a two-year period.

Common first year — full-time

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC131 Physical Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC141 Analytical Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC151 Inorganic Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC161 Organic Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC171 Biology</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>SK121 Computer Science</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SM151 Mathematical Methods</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>SP101 Physics</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC132 Physical Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC142 Analytical Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC152 Inorganic Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC162 Organic Chemistry</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SC172 Biology</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td>SK122 Computer Science</td>
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<td>36</td>
</tr>
<tr>
<td>SM152 Mathematical Methods</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>SM162 Numerical Methods</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>SP102 Physics</td>
<td>4</td>
<td>72</td>
</tr>
</tbody>
</table>

Common first year — part-time

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SK121 Computer Science</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SM151 Mathematical Methods</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>SP101 Physics</td>
<td>5</td>
<td>90</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK122 Computer Science</td>
<td>2</td>
<td>36</td>
</tr>
<tr>
<td>SM152 Mathematical Methods</td>
<td>5</td>
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<td>18</td>
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<tr>
<td>SP102 Physics</td>
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<tr>
<td>Semester 3</td>
<td></td>
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<tr>
<td>SC131 Physical Chemistry</td>
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<tr>
<td>SC172 Biology</td>
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</tbody>
</table>

On completion of the common first year, selection is made in consultation with the teaching staff of each student’s future areas of study. Selection takes into account the student’s areas of interest, the academic ability shown during the first year and an assessment of the student’s aptitude for the various areas of study. Quotas may apply for individual majors in the second year.
Degree of Bachelor of Applied Science  
(1979 syllabus)

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

1. a double major in applied chemistry
2. biochemistry combined with chemistry;
3. chemistry combined with instrumental science;
4. biophysics combined with instrumental science;
5. computer science combined with chemistry;
6. computer science combined with instrumental science;
7. instrumental science combined with mathematics;
8. mathematics combined with chemistry;
9. mathematics combined with computer science.

The various degree course structures are described below. Some combinations of major studies may not be offered if student demand is insufficient.

All the degree courses may be studied on a part-time basis, but at present only the chemistry and biochemistry majors are offered for evening study. 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.

Where the course entails majors in two different disciplines and work experience is gained in only one, the special project (SA409) undertaken in the final semester of the course is assigned in the other discipline.

1. Double major in Applied Chemistry

This course provides a thorough basis for a future 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.

In 1982, modifications to the course were introduced. In 1983, semesters three to six are offered in the modified format (the 1982 syllabus) while semester seven is offered in the previous format (the 1979 syllabus).

Full-time course  
(1982 syllabus)

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<tr>
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<tr>
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Full-time Course  
(1979 syllabus)

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<th>Hours semester</th>
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<table>
<thead>
<tr>
<th>Elective Subjects (4)</th>
<th>Hours week</th>
<th>Hours semester</th>
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</table>

* The elective subjects are chosen from the following list:

1. Soil Chemistry
2. Advanced Soil Chemistry
3. Ceramic and Silicate Chemistry
4. Chemical Physiology
5. Liquid and Solid Fuel Technology
6. Instrumental Techniques
7. Paints, Emulsions and Detergents
8. Gaseous Fuels, Theory and Technology
9. Food Chemistry
10. Applied Organic Synthesis
11. Bio-organic Chemistry
12. Heterocyclic Chemistry
13. Steroids
14. Computers in Chemistry

All the above elective subjects will not be offered. Their availability will be determined in response to student requirements.

Part-time course  
(1982 syllabus)

The part-time course is structured to enable students to complete it in six years. Students must also acquire two semesters of work experience. The Institute does not arrange for work experience for part-time students.

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Hours week</th>
<th>Hours semester</th>
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<tbody>
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<tr>
<td>SC219</td>
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<th>Semester 6</th>
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<th>Hours semester</th>
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<tr>
<td>SC317</td>
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<thead>
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<th>Semester 9</th>
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<th>Hours semester</th>
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<tr>
<td>SC417</td>
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<td>SC419</td>
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<table>
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<th>Semester 10</th>
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<th>Hours semester</th>
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<tbody>
<tr>
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<td>AT393</td>
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<tr>
<th>Semester 11</th>
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<tr>
<td>SC457</td>
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<th>Hours semester</th>
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<tbody>
<tr>
<td>SC458</td>
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<td>72</td>
</tr>
<tr>
<td>BS495</td>
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</tbody>
</table>
2 Biochemistry/Chemistry

This course involves the study of the structure and function of the chemical systems of living organisms and the application of this knowledge in the areas of clinical chemistry, pharmaceutical chemistry, the food industry, and other fields. The course 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.

In 1982 modifications to the course were introduced. In 1983, semesters three to six are offered in the modified format (the 1982 syllabus) while semester seven is offered in the previous format (the 1979 syllabus).

Full-time course
(1982 syllabus)

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours week</th>
<th>Hours semester</th>
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<td>SC217 Chemistry</td>
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<tr>
<td>SC277 Biochemistry</td>
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<tr>
<td>SC279 Practical Biochemistry</td>
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<tr>
<td>SC297 Microbiology</td>
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Semester 4
SA204 Work Experience

Semester 5
SA209 Work Experience

Semester 6
AT291 Report Writing | 1 | 18 |
SC317 Chem-stry | 6 | 108 |
SC319 Practical Chemistry | 3 | 54 |
SC377 Biochem-stry | 3 | 54 |
SC378 Analytical Biochem-stry | 2 | 36 |
SC379 Practical Biochemistry | 5 | 90 |
SC397 Microbiology | 4 | 72 |

Semester 7
BS495 Business Studies | 4 | 72 |
SC417 Chemistry | 5 | 90 |
SC419 Practical Chem-stry | 3 | 54 |
SC475 Industrial Biochemistry | 2 | 36 |
SC476 Physical Biochemistry | 2 | 36 |
SC477 Current Topics | 2 | 36 |
SC478 Mammalian Biochemistry | 2 | 36 |
SC479 Practical Biochemistry | 4 | 72 |

Full-time course
(1979 syllabus)

Semester 7 of the 1979 syllabus is offered as follows:

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<th>Semester 7</th>
<th>Hours week</th>
<th>Hours semester</th>
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* The elective subjects are listed under Double Major in Applied Chemistry.

Part-time course
(1982 syllabus)

The part-time course is structured to enable students to complete it in six years. Students must also acquire two semesters of work experience. The Institute does not arrange for work experience for part-time students.

<table>
<thead>
<tr>
<th>Semester 5</th>
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<th>Semester 6</th>
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<th>Hours semester</th>
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<tr>
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<td>SC319 Practical Chemistry</td>
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<tbody>
<tr>
<td>SC277 Biochemistry</td>
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<td>SC297 Microbiology</td>
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<tr>
<td>SC477 Current Topics</td>
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</table>

3 Chemistry/Instrumental Science

Modern chemical laboratories use a wide range of complex scientific equipment and there is at present a shortage of chemists with a detailed knowledge of the design and the operation of this equipment. This combination of major studies, unique to Swinburne, provides training for instrumental chemists.

The course combines a study of chemistry with nuclear and optical instrumentation, control and measurement theory and microprocessor operation and applications, with emphasis on the applications of digital and analogue electronics.

In 1982, modifications to the course were introduced. In 1983, semesters three to six are offered in the modified format (the 1982 syllabus) while semester seven is offered in the previous format (the 1979 syllabus).

Full-time course
(1982 syllabus)

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<tbody>
<tr>
<td>SA209 Work Experience</td>
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</table>
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 within 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
(1979 syllabus)

5 Computer Science/Chemistry

Computers are of increasing importance in chemistry. They allow the storage of large amounts of chemical information (including abstracts of scientific papers), the retrieval of information from these data-bases, the storage and processing of data from scientific instruments, the simulation of experiments, and computer-assisted instruction.

The computer science major provides the computer background and techniques for the development of these applications. The chemistry major provides the chemical knowledge which is needed for an understanding of the use of computers in chemistry.

In 1982 modifications to the course were introduced. In 1983, semesters three to six are offered in the modified format (the 1982 syllabus) while semester seven is offered in the previous format (the 1979 syllabus).

Full-time course
(1982 syllabus)

Semester six of the 1979 syllabus is offered as follows:

Semester 6

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<tr>
<th>Subject</th>
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Semester 7

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Full-time course
(1979 syllabus)

Semester 7 of the 1979 syllabus is offered as follows:

Semester 7

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4 Biophysics/Instrumental Science

Full-time course
(1979 syllabus)

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Semester 6

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Semester 7

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* The elective subjects are listed under Double Major in Applied Chemistry.
6 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
(1979 syllabus)

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</table>

7 Instrumental Science/Mathematics

The mathematics major concentrates on the operations research approach to problems in business, industry and government. Mathematical and statistical models such as linear programming, network analysis, queuing theory and regression analysis are used to solve problems in inventory control, resource planning, allocation and other areas.

A thorough appreciation of instrumental philosophies and techniques is offered in 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
(1979 syllabus)

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<tr>
<td>SM451 Mathematical Methods</td>
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</tbody>
</table>

8 Mathematics/Chemistry

As the mathematics major concerns the study of operations research techniques — such as network analysis, linear programming and statistical analysis, the combination of these with chemistry major provides the opportunity of linking the managerial and the chemical aspects of the chemical industry. The combination of these mathematical techniques with chemistry also adds a further dimension to the study of the industrial applications of chemical processes.

In 1982 modifications to the course were introduced. In 1983, semesters three to six are offered in the modified format (the 1982 syllabus) while semester seven is offered in the previous format (the 1979 syllabus).

Full-time course
(1982 syllabus)

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<table>
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</tbody>
</table>

* The elective subjects are listed under Double Major in Applied Chemistry.
9 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 used in the solution of mathematical, engineering and business problems and the implementation of these in a suitable algorithmic or business-oriented language. The work is supplemented during the latter years of the course by studies in logic, programming techniques and systems science.

Full-time course
(1979 syllabus)

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Diploma of Applied Science
(Applied Chemistry) and (Biochemistry)

No new students are being accepted into these diploma courses. Students already enrolled may continue their present courses by special arrangements, details of which may be obtained from the Head of the Applied Chemistry department.

Diploma of Applied Science
(Environmental Health) (1976 syllabus)

This 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

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<tr>
<td></td>
<td>SC384 Microbiology 3</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td>SC385 Epidemiology 3%</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>SC391 Chemistry 6</td>
<td>108</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS497 Office Systems and Administration 1</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>BS499 Law 3%</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>CE401 Health Engineering 3</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>EA421 Industrial Processes 4</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>ME449 Environmental Engineering 3</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>SC402 Environmental Health 6</td>
<td>108</td>
<td></td>
</tr>
<tr>
<td>SC411 Seminars, visits, etc. 3%</td>
<td>63</td>
<td></td>
</tr>
</tbody>
</table>

Part-time course

The part-time course is designed so that the academic work may be completed in five years by students who attend for twelve hours (one afternoon and two evenings) per week.
In addition to the academic work listed below, part-time students are required to include SA200 Work Experience and SA308 Work Experience in their course. Students in the part-time course must arrange for their own work experience. This experience must be for one year under supervision of a qualified health surveyor. It must be approved by Swinburne before commencing the seventh semester and completed satisfactorily before commencing the ninth semester.

In 1982, the study program was changed to the following subject arrangement. The first and second years are interchangeable as are the third and fourth.

Students who in 1983 are studying the third, fourth and fifth year of the course follow the subject groupings as determined at the time of their first enrolment.

### 1st year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT191</td>
<td>2</td>
<td>SC191</td>
<td>5</td>
</tr>
<tr>
<td>SP111</td>
<td>5</td>
<td>SC192</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SP112</td>
<td>4</td>
</tr>
</tbody>
</table>

### 2nd year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED101</td>
<td>3</td>
<td>BS192</td>
<td>2</td>
</tr>
<tr>
<td>SC181</td>
<td>6</td>
<td>ED102</td>
<td>3</td>
</tr>
<tr>
<td>SM111</td>
<td>3</td>
<td>SC182</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SM121</td>
<td>1</td>
</tr>
</tbody>
</table>

### 3rd year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS293</td>
<td>3</td>
<td>SC283</td>
<td>5</td>
</tr>
<tr>
<td>SC293</td>
<td>4</td>
<td>SC311</td>
<td>3½</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SC384</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SC385</td>
<td>3½</td>
</tr>
</tbody>
</table>

### 4th year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC210</td>
<td>2</td>
<td>CE223</td>
<td>2</td>
</tr>
<tr>
<td>CE223</td>
<td>2</td>
<td>CE225</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EA221</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SM213</td>
<td>2</td>
</tr>
</tbody>
</table>

### 5th year

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE401</td>
<td>3</td>
<td>BS497</td>
<td>1</td>
</tr>
<tr>
<td>ME449</td>
<td>3</td>
<td>BS499</td>
<td>3½</td>
</tr>
<tr>
<td>SC402</td>
<td>6</td>
<td>EA421</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SC411</td>
<td>3½</td>
</tr>
</tbody>
</table>

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**Graduate Diploma in Applied Colloid Science (1980 syllabus)**

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

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

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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC531</td>
<td>8</td>
<td>SC531</td>
<td>8</td>
</tr>
<tr>
<td>SC532</td>
<td>8</td>
<td>SC533</td>
<td>8</td>
</tr>
<tr>
<td>SC534</td>
<td>8</td>
<td>SC535</td>
<td>8</td>
</tr>
<tr>
<td>SC536</td>
<td>8</td>
<td>SC537</td>
<td>8</td>
</tr>
<tr>
<td>SC538</td>
<td>8</td>
<td>SC539</td>
<td>8</td>
</tr>
</tbody>
</table>

* The elective subjects are chosen from the following list:
  - SC532 Emulsion Technology
  - SC533 Polymer Flocculation
  - SC534 Mineral Processing Chemistry
  - SC535 Detergency
  - SC536 Surface Coatings
  - SC537 Corrosion and Protection of Metals

These subject 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 (1982 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 including at least three biomedical units and the project unit.

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

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**Graduate Diploma in Applied Colloid Science (1980 syllabus)**

- SC531 Colloid Experimental Techniques
- SC532 Emulsion Technology
- SC533 Polymer Flocculation
- SC534 Mineral Processing Chemistry
- SC535 Detergency
- SC536 Surface Coatings
- SC537 Corrosion and Protection of Metals

These subject 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.**
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 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>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SK511</td>
<td>Digital Simulation Languages</td>
<td>45</td>
</tr>
<tr>
<td>SK513</td>
<td>Computer Techniques – Digital</td>
<td>40</td>
</tr>
<tr>
<td>SK514</td>
<td>Mathematics Simulation Techniques</td>
<td>45</td>
</tr>
<tr>
<td>Semester 2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SK512</td>
<td>Methodology of Simulation</td>
<td>40</td>
</tr>
<tr>
<td>SK522</td>
<td>Digital Simulation Languages</td>
<td>40</td>
</tr>
<tr>
<td>SK515</td>
<td>Mathematical Simulation Techniques</td>
<td>40</td>
</tr>
<tr>
<td>Semester 3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SK516</td>
<td>Computer Techniques</td>
<td>60</td>
</tr>
<tr>
<td>SK517</td>
<td>Analogue/Hybrid</td>
<td>30</td>
</tr>
<tr>
<td>SK518</td>
<td>Digital Simulation Languages</td>
<td>30</td>
</tr>
<tr>
<td>SK519</td>
<td>Project Work</td>
<td>30</td>
</tr>
<tr>
<td>Semester 4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SK520</td>
<td>Project Work/Case Studies</td>
<td>75</td>
</tr>
<tr>
<td>SK513</td>
<td>Mathematical Simulation Techniques</td>
<td>45</td>
</tr>
</tbody>
</table>

**Graduate Diploma in Scientific Instrumentation (1979 syllabus)**

This course is primarily intended for graduates and diplomates in a scientific or engineering discipline who are working in a chemical or biochemical area and 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 timetable specifying eight hours (two evenings) per week for four fifteen-week semesters.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>week</td>
<td>semester</td>
</tr>
<tr>
<td>SC541</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC542</td>
<td>Practical Work</td>
<td>4</td>
</tr>
<tr>
<td>Semester 2</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SC543</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC544</td>
<td>Practical Work</td>
<td>4</td>
</tr>
<tr>
<td>Semester 3</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SC545</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC546</td>
<td>Practical Work</td>
<td>4</td>
</tr>
<tr>
<td>Semester 4</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>SC547</td>
<td>Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>SC548</td>
<td>Practical Work</td>
<td>4</td>
</tr>
</tbody>
</table>
Applied Science subject details

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>Applied Science</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>
<tr>
<td>AT</td>
<td>Arts</td>
</tr>
<tr>
<td>BC</td>
<td>Building Construction</td>
</tr>
<tr>
<td>BS</td>
<td>Business</td>
</tr>
<tr>
<td>CE</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>EA</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>ED</td>
<td>Engineering Drawing</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
</tbody>
</table>

SA201  Industrial Case Studies

A second-year subject in the degree courses 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.

SA208  Work Experience

A six-month period of work experience occurring as part of the second year of the course leading to the Diploma of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA209  Work Experience

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

SA301  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.

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
Prerequisite: satisfactory completion of the first five semesters of the course.

A compulsory sixth-semester subject in the degree course in applied science for students majoring in mathematics and computer science.

The subject comprises individually assigned work and involves oral and/or written presentation in the areas of applied research and project management.

References
Steele, L.W. Innovatron in Big Business N.Y., Elsevier, 1975

SA308  Work Experience

A six-month period of work experience occurring as part of the third year of the course leading to the Diploma of Applied Science (Environmental Health). Students are supervised by a member of the academic staff and are required to submit a report to their employer and to their supervisor.

SA309  Work Experience

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

SA409  Special Project

Four hours per week for one semester.
Prerequisite: satisfactory completion of the first three years of the course.

A compulsory final-year subject in the degree course in applied science (except for the double major in applied chemistry).

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

SC131/ SC132  Physical Chemistry

One hour of theory per week for two semesters plus practical work.

A compulsory subject in the common first year of the degree/diploma of applied science.

Thermodynamics. The first, second and third laws, culminating in a discussion of free energy as a criterion of spontaneity and chemical equilibrium.
Chemical Kinetics. Rate laws governing zero, first and second order reactions; simple reaction mechanisms

References
*Mahan, B.H. University Chemistry 3rd edn, Reading, Mass., Addison-Wesley, 1975
*strongly recommended

SC141/ SC142  Analytical Chemistry

One hour of theory per week for two semesters plus practical work.

A compulsory subject in the common first year of the degree/diploma of applied science.

A study of acid-base, sparingly soluble salt, complex ion, and redox equilibria provides a theoretical basis for selected aspects of practical analytical chemistry as well as an aid to the understanding of chemical equilibrium. Applications of the theory will be illustrated throughout the chemistry/practical course.
Preliminary reading

Recommended text

References
Fritz, J.S. and Soehne, G.H. Quantitative Analytical Chemistry, 3rd edn, Boston, Allyn and Bacon, 1974

SC151/ SC152 Inorganic Chemistry
One hour of theory per week for two semesters plus practical work
A compulsory subject in the common first year of the degree/diploma of applied science.

Topic 1: chemical bonding and structure.
Treatment of major chemical bond types, viz. ionic, covalent, metallic and intermolecular.
Structure of ionic compounds, metals, polyatomic ions and molecules.
Throughout the topic the correlation between bond type and properties of compounds and elements will be emphasised.

Topic 2: chemistry of the elements.
The physical properties and thermodynamics of the elements are used extensively to discuss the important factors in determining the oxidation states adopted, the redox properties exhibited, the formation of compounds, the extraction of the elements, and the range of allotopic forms. Industrial uses of most of the elements are considered with emphasis on those of most importance.

References
There is no one reference suitable for Inorganic SC151/2. The references listed below will be referred to throughout the lecture course

Topic 1
Aylward, G.H. and Findlay, T.J.V. S.I. Chemical Data, Syd., Wiley, 1971
Campbell, J.A. Chemical Systems: Energy, Dynamics, Structure
San Francisco, Freeman, 1970

Topic 2
Campbell, J.A. Chemical Systems: Energy, Dynamics, Structure
San Francisco, Freeman, 1970
Mahan, B.H. University Chemistry 3rd edn, Reading, Mass., Addison-Wesley, 1975

SC161/ SC162 Organic Chemistry
One hour per week of theory for two semesters plus practical work
A compulsory subject in the common first year of the degree/diploma in applied science.
A course covering the fields of basic aliphatic and aromatic organic chemistry. It includes the study of methods of preparation, the reactions and Industrial uses of the following classes of compounds: hydrocarbons, alkyl halides, alcohols, carbonyl compounds, carboxylic acids and their derivatives and benzene. The course is designed to give students a basic understanding of the underlying concepts, and mechanisms associated with the reactions of the abovementioned compounds. Bonding of organic compounds is also covered, with emphasis on \( \sigma \) and \( \pi \) bonds.

References
Morrison, R.T. and Boyd, R.N. Organic Chemistry 3rd edn, Boston, Allyn and Bacon, 1973

SC171/ SC172 Biology
Four hours of theory and practical work per week for two Semesters.
A compulsory subject in the common first year of the degree/diploma in applied science.
The course provides an introduction to the biological world and background for subsequent subject areas in applied biochemistry and biophysics majors. The course involves an integrated study of cell biology, genetics, microbes, plants and animals, ecology, evolution and an introduction to biochemistry.

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, 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
Evolution: taxonomic principles applied to plant, animal and protista kingdoms. Causes and processes of evolution. Major evolutionary lines using selected examples of importance to public health.
Ecology: ecosystem energy chains, food chains and food webs and their relationships to mammalian activity and function. Pollution and its effect on eco-systems.

Prescribed textbook
No single book covers the areas taught to sufficient depth. Students will be referred to specific references during the course.
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.


Kinetics: reaction rates, equilibria.

Preliminary reading

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 ions and solubility products.


Brief introduction to water chemistry, pesticides, air-pollution and food chemistry.

SC197 Chemistry
Six hours of theory per week for one semester

Prerequisites, SC131/2, SC141/2, SC151/2, SC161/2

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

Thermodynamics
Thermodynamics of formation (\Delta H^\circ, \Delta S^\circ, \Delta G^\circ) and the variation of AG, AS^\circ and KE with temperature. Thermochemistry of data handling and manipulation. Chemical potentials, available work.

Phase 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 on-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 sulphonyl, acyl, sulphonamides, amines, aromatic halides and phenols.

Spectroscopy
Concept of and techniques. Instrumental components, their function and effects. Factors in the shape of spectra. The use of IR, AA and UV/visible spectrometers, and modes of operation, qualitative and quantitative analysis.

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

SC219 Practical Chemistry
Four hours of practical chemistry per week for one semester

Prerequisites: 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, a gas chromatograph, UV/visible spectrometry. Organic techniques: volumetric analysis for saponification and unsaturation equivalent, steam distillation, identification and characterization using chemical tests, physical measurements, gas chromatography and infra-red spectrometry (IR).

Physical experiments: thermodynamics and phase equilibria.

SC257 Chemistry
Four hours theory per week for one semester

A second-year subject in the diploma course in applied science (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 are used.

References

Kinetics (18 hours)
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.

Reference
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 relationships 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 (16 hours)

References
Allen, J. A. An Outline of Polymer Chemistry. Edinb., Oliver and Boyd, 1968
Jenkins, A. D. and Ledwith, A., eds. Reactivity, Mechanism and Structure in Polymer Chemistry. Lond., Wiley, 1974
Moore, W. R. An Introduction to Polymer Chemistry. Lond., University of London Press, 1963
Seymour, R. B. Introduction to Polymer Chemistry. N.Y., McGraw-Hill, 1971
Still, J. K. Introduction to Polymer Chemistry. N.Y., Wiley, 1962

SC258 Industrial Chemistry
Three hours per week for one semester
A second-year subject for degree students majoring in applied chemistry.
Topics to be discussed in this subject will include: the chemical industry and its relationships with other industries, chemical raw materials, energy sources (coal, oil, natural gas, nuclear), location of industry, solids and liquids handling, separation and purification, and utilities.
Some of the physico-chemical principles involved in industrial processes will be illustrated by a major case study based on the production of polyvinyl chloride.

References

SC259 Practical Chemistry
Three hours of practical chemistry per week for one semester
Prerequisites are the completion of first-year chemistry or its equivalent and the completion of, or concurrence with, SC219
A second-year (semester 3) subject in the degree course for chemistry students.
Analytical: extension of SC219, further volumetric analysis, electromigration and a project in quantitative AA analysis.
Organic: extension of SC219. Preparations, recrystallisation, extraction, separation by column chromatography, identification by IR, measurement with U/VIS spectrophotometry.
Physical experiments: kinetics and spectroscopy.

SC266 Organic Chemistry
Three hours of theory per week for two semesters plus practical work
Prerequisites, SC161, SC162
A second-year subject in the diploma course in applied science (applied chemistry) and (biochemistry), taught in an individualised format.
The principles of organic chemistry are extended to aromatic compounds, emphasising differences and similarities with aliphatic compounds.
Reactions are reviewed (and extended) according to their type: carbonyl reactions, carboxonium ion reactions, substitutions, etc.

SC277 Biochemistry
Three hours theory and five hours practical work per week for one semester
Prerequisite: completion of the common first year
A second-year subject for degree students majoring in biochemistry.
The following topics will be studied: chemistry of biological compounds including an introduction to protein structure; ATP structure and function; enzyme kinetics; metabolism of carbohydrates, glycogen; fats and fatty acids as fuels; tricarboxylic acid cycle, electron transport and oxidative phosphorylation; protein catabolism, urea cycle; biochemical techniques.

References

SC279 Practical Biochemistry
Four hours of laboratory work per week for one semester
Prerequisite is the completion of common first year
A second-year subject for degree students majoring in biochemistry.
Students become practised in the handling of biochemicals, tissue preparation, extraction techniques, cellular fractionation, separation methods, preparation and assay of enzymes, calorimetry, spectrophotometry and centrifugation.

SC283 Microbiology
Five hours per week for one semester
A second-year subject in the diploma course in applied science (environmental health).
The course introduces the students to the biology of viruses, bacteria, fungi and algae with emphasis on the interactions of micro-organisms with organisms, particularly man. The course extends the basic principles of biochemicals, tissue 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 healthy and hygienic premises.

Food chemistry: food as the basic energy source. Types of foods and the chemicals and the hazards involved in their use. Metabolism of food.

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

Toxicology: biological action and use of the 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 microorganisms. Lectures are given on microscopy and the other tools of microbiology. Concomitantly with studies in biochemistry, aspects of microbial reproduction, 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.

Recommended texts

SC307  Inorganic Manufacturing Industries
One hour per week for two semesters
Prerequisite: SC207

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

A study of:
(i) the chemistry of a selection of the following: S, Si, N, P, Cl and metals, and of their commercially important compounds;
(ii) the manufacturing processes involved in the large-scale production of the elements and their consumer compounds.

Rationalisation of the nature, problems and economic aspects of the selected processes in terms of the chemistry of the species concerned. The application of physico-chemical principles, e.g. thermodynamics, kinetics, catalysis, and separation techniques, to plant efficiency — integration of these principles with the basic inorganic chemistry involved.

SC308  Organic Manufacturing Industries
One hour per week for two semesters
Prerequisite: SC207

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

This subject applies theoretical principles to industrial organic manufacturing. Topics include the properties and manufacture of synthetic polymers and synthesis.

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 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
Gaddow, 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 (16 hours)
Thermodynamics of electrochemical equilibrium, electrodes and phenomena occurring on them; cells and their functioning.

References
To be given by lecturer

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

References
Adamson, A. W. Physical Chemistry of Surfaces. 2nd edn, N.Y., Wiley, 1967
Shaw, D. J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970

Organic chemistry (36 hours)

References
To be given by lecturer

Ion exchange and solvent extraction (18 hours)
Principles and applications in industrial, laboratory and biochemical situations.

References
Paterson, R. An Introduction to Ion Exchange. Lond., Heyden, 1970
SC319  **Practical Chemistry**
Three hours per week for one semester
Prerequisite: SC219

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

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.

SC336  **Applied Physical Chemistry**
Two hours of theory per week for two semesters plus practical work
Prerequisites: SC236, SC237

A third-year subject in the diploma course in applied science (applied chemistry)

Technological applications of electrochemistry: this unit is an extension of the core unit in electrochemistry in SC236. Application of controlled electrolysis (potentiostatic and galvanostatic) to refining and recovery of metals, treatment of waste, and synthesis. Industrial cells and electrodes — electrocatalysis. The electrochemical nature of corrosion — corrosion inhibition. Battery technology.

Surface and colloid chemistry: two main topics will be covered in this course with a strong emphasis on applications of the phenomenon studied.

(a) Liquid surfaces — surface and interfacial tensions; surface thermodynamics, adsorption at interfaces; properties of surfactant solutions, the spreading of liquids, insoluble monolayers; contact angles, wetting and detergency.

(b) Electrical phenomena — the development of charge and potential at interfaces; structure of the electrical double layer; electrokinetic phenomena; colloid stability.

**Kinetics**

(a) Kinetic studies of chemical reactions. Review rate theories of biomolecular gas reactions, thermodynamic formulations of transition state equations.

(b) Non-branching chain gas reactions.

(c) Branching chain gas reaction, gas phase autoxidations, reactions in the internal combustion engine, fuels to match high engine compression ratios, exhaust emissions from internal combustion engines and their control, photochemical smog formations, gas reactions in the upper atmosphere, the ozone layer.

(d) Solution kinetics. Dielectric constant (solvent) and ionic strength effects.

**References**

Adamson, A.W. Physical Chemistry of Surfaces. 2nd edn, N.Y., Wiley, 1967


Shaw, D.J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970

SC346  **Applied Analytical Chemistry**
One hour of theory per week for two semesters plus practical work
Prerequisites: SC246, SC247

A third-year subject in the diploma course in applied science (applied chemistry)

Nuclear magnetic resonance spectroscopy: chemical shift, integrated area, first and second order splitting patterns, magnetic equivalence, rate and time considerations, the analysis of spectra and instrumentation.

Mass spectrometry: instrumentation. Applications will include qualitative analysis and fragmentation reactions.

Gas chromatography — mass spectrometry; direct connection of the mass spectrometer to the chromatograph using separators.

Applications of GC — MS

Data processing. Automatic chemical analysers. Process analysers, including the gas chromatograph, oxygen, infra-red and moisture analysers, and trace gas analysers. The use of process analysers in process control systems.

**References**


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-Volmer equation to multielectrode reactions; experimental methods — potentiostatic and galvanostatic electrolysis; mass transport control of electrode reaction, 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**

Hiemenz, Paul 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

Adamson, A. W. Physical Chemistry of Surfaces. 3rd edn, N.Y., Interscience 1976


SC358  **Industrial Chemistry**
Two hours per week for one semester

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


**References**


SC359  **Practical Chemistry**
Three hours per week for one semester
Prerequisites: SC219, SC259

A third-year subject for degree students doing a double major in applied chemistry.

**Extension of the techniques covered in SC319**

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SC366  **Applied Organic Chemistry**  
One hour of theory per week for two semesters, plus practical work  
Prerequisite, SC366  
A third-year subject of the diploma course in applied science (applied chemistry).  
A study of the heterocyclic compounds of nitrogen, oxygen and sulphur, the organic chemistry of other elements, and photochemistry.

SC367  **Organic Chemistry**  
Two hours of theory per week for two semesters plus practical work  
Prerequisite, SC266  
A third-year subject of the diploma course in applied science (biochemistry).  
The course extends basic principles studied in earlier years to more complicated systems. Topics covered include heterocyclics, macromolecules, organosilicon and phosphorus compounds, photochemistry and synthesis.

SC376  **Microbiology**  
Two hours of theory and three hours of practical work per week for two semesters  
Prerequisite, SC286  
A third-year subject in the diploma course in applied science (biochemistry).  
The course provides basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilisation, and antisepsis, microbial anatomy, physiology and growth, and systematics. Basic material is developed to illustrate the use of microorganisms in processes such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry.  
Practical work illustrates the essential features of each of the above areas. Emphasis is placed on developing the manipulative skills required to handle microbes and to maintain sterile conditions.

**Preliminary reading**  

**References**  

SC377  **Biochemistry**  
Three hours of theory per week for one semester  
Prerequisites, SC277, SC279  
A third-year subject for degree students majoring in biochemistry.  
The course covers the following topics: mitochondrial formation of ATP, biosyntheses of carbohydrates, lipids, purparysins, nucleic acids and proteins; structure and function of porphyrins and bile salts; formation of bile pigments; control mechanisms and the regulation of metabolism.

**References**  
Newsholme, E.A. and Start, G.  *Regulation in Metabolism*, Lond., Wiley, 1977  
(Additional references and reading materials will be specified during the course).

SC378  **Analytical Biochemistry**  
Two hours of theory per week for one semester  
Prerequisites, SC277, SC279  
A third-year subject for degree students majoring in biochemistry.  
The course covers the following topics: the applications of radio isotopes in biochemistry; automation in biochemistry; ultrafiltration; preparative centrifugation, lyophilisation, assays involving immunological techniques, protein chemistry, (including immunochrometry) and techniques of protein analysis.

**References**  
References and reading material are specified during the course

SC379  **Practical Biochemistry**  
Five hours of laboratory work per week for one semester  
Prerequisites, SC277, SC279  
A third-year subject for degree students majoring in biochemistry.  
Students design and/or conduct experiments involving the extraction, purification and assay of proteins and enzymes. Induction of a bacterial enzyme, uptake of oxygen by mitochondria and continuous flow assays. Apparatus used by students includes the recording spectrophotometer, gel electrophoresis apparatus, chromatographic apparatus, orbital incubators, shaking water baths, autoclave, centrifuges, oxygen-sensitive electrode and autoanalyzer.

SC384  **Microbiology**  
Three hours per week for one semester  
Prerequisite, SC383  
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.

SC386  **Biochemistry**  
Three hours of theory and five hours of practical work per week for two semesters  
Prerequisites, SC280, SC286, SC376  
A third-year subject in the diploma course in applied science (biochemistry).  
The course comprises: biochemical techniques and methodology: chromatography; electrophoresis; extraction; gaseous exchange; automated analyses; microscopy; preparation of subcellular fractions; radio-isotopes and immunological techniques. Hormonal control in mammalian biochemistry: chemistry of the brain; nervous system; muscle; liver; adipose tissue, adenosynapthy and other selected organs. Control of metabolism in each of these tissues by means of hormonal mechanisms. Protein and enzyme chemistry: classification; quantitative estimations; fractionation and purification; determination of primary sequence; intra- and intermolecular forces in proteins; conformational analysis; denaturaton; mechanisms of catalysis; evolution; control mechanisms at the level of protein structure. Biochemical genetics; the genetic control of protein structure: structure and function of the nucleic acids; errors of metabolism. Photosynthesis; pigments; Calvin cycle; C4 dicarboxylic acid cycle; photospiration; the chloroplast. Clinical chemistry; instrumentation and analyses applicable to clinical diagnosis.
Physical Biochemistry

Two hours of theory and three hours of practical work per week for two semesters
Prequisite: SC236

A third-year subject in the diploma course in applied science (biochemistry)
The aim of this subject is to give an understanding of the basic theory of several techniques and to apply these to biochemical problems. Topics covered include molecular weight determinations, optical rotatory dispersion, X-ray crystallography, spectroscopy and enzyme kinetics.

Reference

Chemistry
Six hours per week for one semester
Prequisites: SC191, SC192

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

A study of the application of chemical principles to the environment. Topics include sampling techniques, the principles of analytical instruments, the constituents of household substances, pollutants in air, water and soil, and food chemistry.

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). Applied microbiology: use of microorganisms in industrial processes, control of microorganisms in the food and pharmaceutical industries, legal standards, treatment of wastes. Microbial ecology: elementary host-parasite relationships, symbiosis, infection, epidemiology.

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 microorganisms are classified and identified. Some aspects of microbial ecology are considered. Some computer simulations are used also, to reinforce certain principles.

Textbooks


Environmental Health
Six hours per week for one semester

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

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 transport theory; field visit and report.
- Pest control: recognition and control

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SC404 Project

A minimum of one hundred and twenty hours

A unit undertaken by part-time diploma/degree conversion students.
The unit comprises individually assigned work normally associated with the student's occupation.

SC405 Ceramic and Silicate Chemistry

One hour per week for one semester

An elective subject in the final year of the degree courses for students majoring in chemistry.

A survey of the structures of silicate minerals used in ceramics. Manufacture of glass and cement. Manufacture and structure of modern ceramics.

SC406 Chemical Physiology

One hour per week for one semester

An elective subject in the final year of the degree course for students majoring in biochemistry.

The course relates organ structure and physiological function to detailed biochemical mechanisms.

The following topics are studied: the molecular basis of immunological processes; the physiology of the renal system and respiratory systems; the function of these systems in the control of body fluids and acid base balance.

Appropriate practical work is included in the program.

References

References and reading material will be specified during the course.

SC407 Liquid and Solid Fuel Technology

One hour per week for one semester

An elective subject in the final year of the degree courses for students majoring in chemistry.

The following topics are included: the origin of petroleum and coals, refining processes for the upgrading of petroleum feedstocks, classification of coals, maceral groups and their importance; use of coals in synthesis; production via processes of current and local interest, use of zeolite catalysis, recent advances in the use of hydrogen as a 'solid' fuel.

SC408 Instrumental Techniques

Eighteen hours in one semester

An elective subject in the final year for the degree courses for multidisciplinary students majoring in chemistry and for whom additional laboratory work is required for the completion of their courses.

The subject comprises practical work undertaken in day or half-day sessions and involves instrumental methods of chemical analysis.

AS21
SC409  Seminars
Two hours per week for one semester
A final-year subject for degree students majoring in applied chemistry.
Students will investigate problems of current chemical/social importance by a combination of literature search, appropriate visits and seminar sessions.

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.

SC415  Food Chemistry
One hour per week for one semester (including six hours of practical work)
An elective subject in the final year of the degree course for students majoring in chemistry.
The course includes the following topics - general chemistry of food, metabolic fate of food components, the role of vitamins, food analysis, methods of food preservation, chemical additives in food. The practical course introduces the student to some of the techniques used in food analysis.

SC423  Bio-organic Chemistry
One hour per week for one semester
An elective subject in the final year of the degree course for students majoring in biochemistry.
The subject has two main sections - steroids and biosynthetic mechanisms. It gives a mechanistic understanding of important natural product chemistry.

SC429  Computers in Chemistry
One hour (including practical work) per week for one Semester
An elective subject in the final year of the degree courses for students majoring in chemistry.
Digital systems in scientific instrumentation. The structure and use of a microprocessor system including its interfacing to laboratory equipment.

SC431  Physical Chemistry
Two hours per week for one semester
Prerequisite, SC311
A final-year subject for degree students majoring in chemistry.
Kinetic studies of chemical reactions. Review of molecular kinetics; development of transition state theory based on statistical thermodynamics, thermodynamic formulation of transition state equations.
Non-branching chain gas reactions. Branching chain gas reactions, gas phase autoxidations including hydrocarbons, reactions in the internal combustion engine, fuels to match high engine compression ratios; exhaust emissions from internal combustion engines and their control, photochemical smog formation; high explosives, gas reactions in the upper atmosphere, the ozone layer.
Solution kinetics. Dielectric constant (solvent) and ionic strength effects; ASS, ΔV1, and hydrostatic pressure effects, high pressure chemistry.

References
Dickenson, R.E. Molecular Thermodynamics. N.Y., Benjamin, 1969
McClelland, B.J. Statistical Thermodynamics. Lond., Chapman and Hall, 1973
N.Y., Harper and Row, 1976

SC441  Analytical Chemistry
Three hours per week for one semester
A final-year subject for degree students majoring in chemistry.

References
Ewing, C.W. Instrumental Methods of Chemical Analysis 4th edn
N.Y., McGraw-Hill, 1975
Lond., Heyden, 1973
Morrison, R.T. and Boyd, R.N. Organic Chemistry 3rd edn, Boston, Allyn and Bacon, 1973
McWilliam, J.G. The Basic Analyser Melb., Swinburne College Press, 1980

SC461  Organic Chemistry
Two hours per week for one semester
Prerequisite, SC361
A final-year subject for degree students majoring in chemistry.
This subject in modern organic chemistry covers the fundamentals of stereochemistry. The principles involved are illustrated in a study of the chemistry of monosaccharides and disaccharides. Polysaccharides are considered also with an introduction to the principles of macromolecular chemistry. Current developments in applied organic chemistry will be featured.

References
Refer lecturer in charge

SC482  Biochemistry
Two hours of theory per week for one semester
Prerequisites, SC361, SC382
A final-year subject for degree students majoring in biochemistry.
The subject introduces the following topics of applied significance: industrial genetics, Industrial enzymes, clinical chemistry, fermentation pathways.

References
References and reading material will be specified during the course.

SC483  Physical Biochemistry
Three hours of theory and three hours of practical work per week for one semester
Prerequisites, SC281, SC231, SC382
A final-year subject for degree students majoring in biochemistry.
The subject is designed to establish an understanding of a number of basic physical and physico-chemical techniques as applied to biochemical analyses. Topics include enzyme kinetics, molecular weight determinations, X-ray crystallography, spectroscopy.

References
(Additional reference and reading material will be specified during the course.)
SC491  Practical Chemistry

One hundred and eight hours of practical work in one semester

A final-year subject for degree students majoring in Applied Chemistry.

This subject teaches instrumental analytical techniques. Students are expected to plan their own experiments in order to solve assigned problems.

The program comprises fifteen full-day sessions for full-time students. It may be done in half-day sessions by part-time students.

SC503  Scientific Instruments

A one hundred and twenty hour unit of semester four of the graduate diploma course in scientific instrumentation

A study of a selection of instruments and instrument systems, covering the principles of operation, optical systems, control systems, computer processing and display techniques. The instruments studied are selected to accord with the main interests of the course participants.

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 techniques of colloid science are taught here and are drawn from the following:
- 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 -solubility — 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; electrokinetic techniques — streaming potential microelectrophoresis, electro-osmosis; potentiometric and conductimetric techniques; measurement of flocculation rate; determination of particle size; surface spectroscopic studies etc.
**SC535** Detergency

An elective subject in the graduate diploma 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, wettability and contact angles. Solution properties of detergents — micelle formation, phase diagrams, solubilisation, surface tension, etc. The differences in behaviour between cationic, anionic and non-ionic detergents. Methods of analysis (e.g. ranging from cloud point determination and two-phase titrations to infra-red and NMR analysis). Detergent biodegradability (brief treatment).

**Applications**

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

**Practical work**

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

**SC536** Surface Coatings

An elective subject in the graduate diploma 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 wettability and adhesive strength; formulation of a simple paint; rheology properties; dispersion of pigments; preparation of resins; preparation and characterisation of lacquers; characterisation of coated surfaces (e.g. by electron microscope); minor project work.

**SC537** Corrosion and Protection of Metals

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

**Principles**

(i) Equilibrium electrochemistry (brief treatment). Elementary aspects: relay reactions, electrochemical cells. Nernst equation; conventions. Thermodynamic — effects of temperature and 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 — application 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; dezincification 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.

**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.


**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 and 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
Three hours of theory 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.

Chemistry Practical Work
In the first year, and in the applied chemistry and biochemistry
diploma courses, practical work forms an important part of all
chemistry subjects. The practical work is an integrated course
which may relate to a number of chemistry subjects. Satisfactory
completion of the practical work is required before a student may gain a pass in the relevant subjects. The student's ability in practical work forms part of the final assessment in
the appropriate subjects.
The second, third and fourth-year degree subjects do not have
integrated practical courses.
The degree subjects SC219, SC259, SC319, SC359 and SC419
comprise practical work only and are described elsewhere.

Common first year
The integrated practical course of one hundred and twenty
hours is part of SC131/2, SC141/2, SC151/2 and SC161/2, and is designed to teach common chemical techniques and to illu-
istrate the theory covered in lectures. It may be divided into
two parts —
(a) Physical and Analytical Chemistry, and
(b) Inorganic and Organic Chemistry
Part-time students must therefore undertake either part (a) or part (b) or both.

References
Brown, R.D. and O'Donnell, T.A. Manual of Elementary Practical
Chemistry. 3rd edn, Melb., Melbourne University Press, 1963
Day, R.A. and Underwood, A.L. Quantitative Analysis. 3rd edn,
Day, R.A. and Underwood, A.L. Quantitative Analysis Laboratory
Kolthoff, I.M. et al. Quantitative Chemical Analysis. 4th edn, Lond.,
Macmillan, 1969

Diploma third and fourth years
This practical course is designed to teach analytical techni-
ques, organic techniques and the principles of physical chemistry and occupies the following hours:

<table>
<thead>
<tr>
<th>Hours</th>
<th>Related subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>240</td>
<td>SC236, SC237</td>
</tr>
<tr>
<td>or 330*</td>
<td>SC246, SC247</td>
</tr>
<tr>
<td></td>
<td>SC266</td>
</tr>
<tr>
<td>150</td>
<td>SC236, SC246, SC256, SC266</td>
</tr>
</tbody>
</table>

*This is the requirement for students who are not in approved employment.

Diploma fifth year
Applied chemistry students undertake one hundred and twen-
ty hours of instrumental analytical and physical practical work
associated with SC336 and SC346. In addition students who are not in approved employment are required to complete a project.
Biochemistry students undertake ninety hours of instrumental analytical and physical biochemistry practical work associated with SC307.

Diploma sixth year
Applied chemistry students undertake one hundred and twen-
ty hours of practical work associated with SC366.
Biochemistry students undertake ninety hours of practical work associated with SC367.

Reference
Pescok, R.L. et al. Modern Methods of Chemical Analysis 2nd edn,
N.Y., Wiley, 1978

SK121  Computer Science
Thirty-six hours in one semester.
A compulsory subject in the common first year of the degree/diploma
courses in applied science.
This is an introductory course in the use of computers to solve
problems in the area of applied science. The course uses either
FORTRAN or PASCAL as a programming language to introduce the
student to structured programming concepts and techniques.
Students are required to complete several programming exercises as
an integral part of the course.

Textbook
Tremblay, J.P., Bunt, R.B. and Opseth, L.M. Structured Pascal N.Y.,
McGraw-Hill, 1979

References
Jensen, K. and Wirth, N. User Manual and Report. 2nd edn, N.Y.,
Springer-Verlag, 1975
Tremblay, J.P. and Bunt, R.B. An Introduction to Computer Science
McGraw-Hill, 1979

SK122  Computer Science
Thirty-six hours in one semester
A compulsory subject in the common first year of the degree/diploma
courses in applied science.
The course includes: an introduction to the use of an analogue
computer in solving systems of simultaneous equations;
an introduction to data structures and their applications, structured
programming concepts and techniques and their application to
problem solving in applied science.
Students are required to complete several programming exercises as
an integrated part of the course.

Textbook
Tremblay, J.P., Bunt, R.B. and Opseth, L.M. Structured Pascal N.Y.,
McGraw-Hill, 1979

References
Jensen, K. and Wirth, N. Pascal User Manual and Report. 2nd edn,
N.Y., Springer-Verlag, 1975
Tremblay, J.P. and Bunt, R.B. An Introduction to Computer Science
McGraw-Hill, 1979
SK203  Computer Science
Eight hours per week for one semester
Prerequisite: completion of the common first year
A second-year subject for degree students majoring in computer science.
An introductory study of the major aspects of computing principles and techniques during 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.

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.

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

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 systems; 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.

SK313  Computer Science
Three hours per week for one semester
Prerequisite: SK213 or SK214 or equivalent experience in the use of computer 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.

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 (including participation in a software hut); organisation of programming languages; systems programming; computer graphics; computer communications; and units from the following list of computer applications: real-time systems, simulation and modelling, data-base system design.
The above application units are not all offered in any one year. Their availability is determined in response to student requirements.

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.

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 colution of discrete and continuous simulation problems. Several practical exercises in a particular language are undertaken.

References

SK513  Computer Techniques — Digital
Thirty hours in one semester
A subject of semester one of the graduate diploma course in computer simulation.
This is a study of simulation models which are to be implemented on a digital computer although not necessarily in a special purpose language. The subject is primarily concerned with aspects of the design of such models, for example, the choice between deterministic and stochastic models, the method of time advance (unit time versus event advance), problems involved in transient phenomena, search techniques and feedback loops. The student undertakes practical work as an integral part of this subject.

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 which 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. DAREP, 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 usable displays. Practical experience is provided through workshop sessions using 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), FORTTRAN Compiler, hybrid linkage routines, graphics plotting routines.
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.

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 CPSS, INS, CSL, and one of these languages will be studied in detail. Several practical exercises are undertaken in this language.

SK531  Computer Programming Techniques
Sixty hours in one semester
Prerequisite, knowledge of a scientific programming language, Mathematics SM263 or equivalent
A subject of the graduate diploma course in biomedical instrumentation.
This subject involves the study of
(i) modern concepts of program design using a language such as Pascal;
(ii) the implementation of programs using FORTTRAN at an advanced level, and
(iii) 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.

SK533  Computer Simulation
Sixty hours in one semester
Prerequisite, the student is expected to be competent in the use of special programming language to implement solutions to simple numeric and non-numeric problems
A subject of the 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.

SM121  Mathematics
Three hours per week for one semester
A first-year 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: differentiation and applications, partial differentiation, integration and applications, 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 have the use of a calculator and the lecturers, on request, will advise on its purchase.
SM122 Mathematics
Fifteen hours in one semester
A first-year 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.

SM151 Mathematical Methods
Five hours per week for one semester
A compulsory subject in the common first year of the degree/diploma courses in applied science.
Introduction to workshops. Errors, curves of best fit, linear algebra, systems of linear equations, determinants, matrices, functions, relations and graphs in Cartesian and polar co-ordinates, limits and continuity, elementary functions and their inverses. Differentiation and its applications, optimisation, the mean value theorem. Integration and its applications, improper integrals.

SM152 Mathematical Methods
Five hours per week for one semester
A compulsory subject in the common first year of the degree/diploma courses in applied science.
Statistics and probability: probability, random variables and statistical distributions, index numbers, stochastic models and Markov chains. Vectors: revision, products, geometry of lines, planes and surfaces. Calculus: functions of many variables, partial differentiation, gradient and directional derivative, multiple integrals. Space curves, parametric coordinates, differentiation with respect to a parameter, simple line integrals, parametric coordinates for a surface, simple surface integrals.

SM162 Numerical Methods
One hour per week for one semester
A compulsory subject in the common first year of the degree/diploma courses in applied science.
Errors types and analysis, solution of nonlinear equations, numerical integration, linear algebra — direct and iterative procedures, differential equations — initial value problems. Some practical computation will be included in assignment work, requiring the use of calculators or computer programs.

References

SM213 Mathematics
Two hours per week for one semester
Prerequisites. SM121 and SM122
A second-year 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-, χ² 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.

SM251 Mathematical Methods
Eight hours per week for one semester
Prerequisite. completion of the common first year
A second-year subject for degree students majoring in mathematics.

Pure mathematics
Sequences and series, linear algebra, difference and ordinary differential equations, transform theory.

Statistics

Operations research
A brief introduction to the methodology of operations research using for example the following areas: model building, mathematical programming, network analysis, inventory control, forecasting.
Case studies in the above areas will be undertaken as part of this unit.

References
Hohn, F.E. Elementary Matrix Algebra. N.Y.: Macmillan, 1964
Mendenhall, W. Introduction to Probability and Statistics. 4th edn, Belmont, Calif., Duxbury, 1975
Mendenhall, W. The Design and Analysis of Experiments. Belmont, Calif., Duxbury, 1971
Mendenhall, W., Ott, L. and Schafer, R.L. Elementary Survey Sampling. Belmont, Calif., Duxbury, 1973
Other references as given for SM351 and SM451.

SM263 Mathematics
Four hours per week for one semester Prerequisite: completion of the common first year
A second-year subject for degree students majoring in biophysics, instrumental science or computer science.

References

SM351 Mathematical methods
Nine hours per week for one semester Prerequisite: SM263
A third-year subject for degree students majoring in mathematics.
Topics include: operations research approach to problems, classical optimisation, linear and integer programming, queuing theory, sample surveys, sampling methods, regression analysis, case studies, work study, seminars. (Some topics in SM351 and SM451 may be interchanged.)

References
An-Min Chung, Linear Programming. Columbus, Ohio, Merrill, 1963
Dantzig, G.B. Linear Programming and Extensions Princeton, N.J., Princeton UP, 1963
Open University. Linear Programming — Theory. 1972
Open University. Linear Programming — A Case Study. (Videorecord), Open University. Linear Mathematics Course Team. Made by BBC-TV, 1974
Naylor, T.H. et al. Introduction to Linear Programming: Methods and Cram, Belmont, Calif., Wadsworth, 1971

SM352 Mathematics
Nine hours per week for one semester Prerequisite: SM263
A second-year subject for degree students majoring in mathematics.

References

SM363 Mathematics
Three hours per week for one semester Prerequisite: SM263
A third-year subject for degree students majoring in computer science and instrumental science or computer science and chemistry.
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
Lewis, C.D. Scientific Inventory Control Lond., Butterworths, 1970
Holdings, N.A.J. Dynamic Programming with Management Applications Lond., Rutterworths, 1973
Wonnacott, T.H. and Wonnacott, R.J. Econometrics N.Y., Wiley, 1970
**SM511  Mathematical Simulation Techniques**  
Three hours per week for one semester  
A subject of semester one of the graduate diploma 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**  

**SM512  Mathematical Simulation Techniques**  
Forty hours in one semester  
Prerequisites, SM511  

A subject of semester two of the graduate diploma in computer simulation.  
A survey of methods used in the numerical solution of ordinary and partial differential equations.  

**References**  
Consult the lecturer in charge

**SM513  Mathematical Simulation Techniques**  
Three hours per week for one semester  
Prerequisite, SM511  

A subject of semester four of the graduate diploma 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**  
Consult the lecturer in charge

**SP111  Physics**  
Three 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.  
Continuous assessment by tests and practical work  

A compulsory subject in the common first year of the degree/diploma courses in applied science.  
Waves and vibrations, atomic and nuclear physics, geometric and physical optics, circuit theory.  

**Recommended texts**  

**SP112  Physics**  
Two 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).  
Continuous assessment by tests and practical work  

Properties of matter: gases, liquids, solids, change of state, calorimetry, temperature measurement.  
Acoustics: waves, vibratory motion.  
Electricity: electromagnetism, electrical measurements (DC) and (AC).  

**Recommended text**  
Consult the lecturer in charge

**SP213  Instrumental Science**  
Eight hours per week for one semester  
Prerequisite, completion of the common first year  
Assessment is continuous by tests and assignments  

A second-year subject for students majoring in instrumental science. Measurement principles, transducers, AC and DC circuit theory, semiconductor physics and devices, introduction to analogue and digital techniques. Workshop practice.  

**References**  
Consult the lecturer in charge

**SP223  Biophysics**  
Eight hours per week for one semester  
Prerequisite, completion of the common first year  
Assessment is continuous by tests and assessment of practical work  

A second-year subject for students majoring in biophysics  
Transport at the cellular level, electrical properties of tissue, electrophysiology and transport of information, skeletal muscle, the cardiovascular system.  

**References**  
Consult the lecturer in charge

**SP304  Signals and Systems**  
Three hours per week for one semester  
Prerequisite, SP213 and SM756  
Assessment is continuous by tests and assignments  

A third-year subject for students majoring in instrumental science.
Signal analysis techniques in optical and instrument systems; 
Detection of signals in noise; 
Linear system analysis using transform techniques.

**References**
Consult the lecturer in charge.

**SP305 Physics**
Three hours per week for one semester
Assessment is continuous by tests and assignments

A third-year subject for students majoring in biophysics or in chemistry.
Quantum physics, nuclear physics, properties of solids, radiation physics, acoustics.

**References**
Consult the lecturer in charge.

**SP313 Instrumental Science**
Nine hours per week for one semester
Assessment is continuous by tests and assignments

A third-year subject for students majoring in Instrumental Science.
Nuclear, optical and chemical instrumentation; analogue and digital techniques in Instrument electronics; introduction to control systems; instrument practice.

**References**
Consult the lecturer in charge.

**SP323 Biophysics**
Nine hours per week for one semester
Assessment is continuous by tests and by assessment of practical work

A third-year subject for students majoring in biophysics.
The heart: the electrocardiogram, electrical stimulation of the myocardium. Body fluids, respiration, monitoring the vascular system, monitoring respiratory parameters, the autonomic nervous system, survey of endocrinology, physiological control system, anaesthesia and systems monitoring, bioelectric instrumentation, bio feedback.

**References**
Consult the lecturer in charge.

**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.

**SP413 Instrumental Science**
Eight hours per week for one semester
Prerequisites: SP313 and SP304
Assessment is continuous by tests and assignments

A final-year subject for students majoring in instrumental science.
Optical instrumentation—rad image processing, lasers, signal recovery techniques, digital electronics, microprocessors, Interfacing techniques, control systems, nuclear, vacuum and chemical instrumentation—on design of instrument systems.

**References**
Consult the lecturer in charge.

**SP423 Biophysics**
Eight hours per week for one semester
Prerequisite: SP323
Assessment is continuous by tests and practical work

A final-year subject for students majoring in biophysics.
Imaging techniques, somatic sensation, proprioception. The spinal cord, peripheral and feedback control of movement and posture, stimulating and recording from the peripheral nervous system, monitoring spinal function. The special senses, the forebrain, functional assessment of the special senses. Special advanced topics. Hospital safety. Seminars.

**References**
Consult the lecturer in charge.

**SP511 Measurement Principles**
Ten hours in one semester

A subject of semester one of the graduate diploma course in scientific instrumentation.
Nature of measurements, standards, systematic and random errors, limits of detection, sensitivity, noise, resolution.

**SP512 Transducers**
Twenty hours in one semester

A subject of semester one of the graduate diploma course in scientific instrumentation.
Actuators and sensors: the principles of operation and characteristics of a range of transducers of both types; the feedback principle; the interfacing of transducers to signal processing or transmitting systems.

**SP513 Instrumental Practice**
Thirty hours in one semester

A subject of semester one of the graduate diploma course in scientific instrumentation.
Physical properties of constructional materials used in instruments. Instrument components and mechanisms; practical workshop experience; printed circuit board techniques; wire wrappings, etc.

**SP514 Instrument Electronics**
Fifty hours in one semester

A subject of semester two of the graduate diploma course in scientific instrumentation.
The subject consists of a study of operational amplifier and semiconductor circuits which will include: Amplifier design and specification, signal processing circuits, low level signal techniques.

**SP515 Signal Processing and Display**
Thirty hours in one semester

A subject of semester three of the graduate diploma course in scientific instrumentation.
Characteristics of signals and noise: signal recovery techniques, filter design and specification, analogue-to-digital and digital-to-analogue conversion, signal recording techniques.

**SP522 Optical Systems**
Fifty hours in one semester

A subject of semester three of the graduate diploma course in scientific instrumentation.
SP531  Biophysical Systems and Techniques  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  
Physiological control mechanisms.  

SP532  Clinical Monitoring Techniques  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  

SP533  Aspects of Metabolic Measurements  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  

SP534  Neurophysiological Techniques  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  

SP535  Project  
Sixty hours in one semester  
A 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.  

SP541  Signal Processing  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  
Digital processing, information theory, signal transmission, noisy channels, signal detection.  

SP542  Optical Instrumentation  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  
Optical transform techniques: holography and holographic techniques, lens design, lasers, optical communication systems.  

SP543  Vacuum Systems  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  

SP544  Nuclear Instrumentation  
Sixty hours in one semester  
A subject of the graduate diploma course in biomedical instrumentation.  

AT191  Health and Society  
Twelve hours per week for one semester  
Assessment is continuous  
A first-year subject in the diploma course in applied science.  
Psychological principles in human behaviour are examined, covering such areas as:  
gene tic determinism in behaviour;  
learning principles applied to human behaviour;  
communication processes and the practical application of these in one-to-one communication;  
role development and how society reinforces different role patterns in people of different ages, backgrounds and sexes.  
Recommended reading  

AT192  Health and Society  
Twelve 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.  
Recommended reading  

AT291  Complementary Studies  
Twelve 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.
AT392  Report Writing  
One hour per week for two semesters  
Assessment is continuous  
A third year subject in the diploma course in applied science (applied chemistry) and (biochemistry).  
There is no formal syllabus, but training is given in the efficient use of library facilities for the investigation of technical topics at final year level. A detailed study is undertaken of the techniques of report writing, including the search for and the collation of information, its organisation and presentation in oral and written form.

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 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 oral reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation 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 but complementary to the study of biophysics. 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.  
Preliminary reading  
Reading and other resources will be given where appropriate

BC210  Building Practices  
Thirty-six hours in one semester  
A second-year subject in the diploma course in applied science (environmental health).  
Assessment is continuous  
Building construction in relation to health surveying is studied and building sites are visited. Uniform building regulations are covered and basic plumbing is taught.

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.

BS293  Law  
Three hours per week for one semester  
Prerequisite, AT392  
A second-year subject in the diploma course in applied science (environmental health).  
The law relating to procedure and evidence with particular reference to Magistrates' courts, professional conduct and ethics in court.  
An introduction to legal procedures in the investigation of summary offences.

BS390  Law  
Sixty-three hours in one semester  
Prerequisite, BS293  
A third-year subject in the diploma course in applied science (environmental health).  
The common law remedies, e.g. nuisance, negligence, relating to environmental health: effectiveness, development and limitations. Detailed examination of the Health Act 1956, the Environment Protection Act 1970 and the Environment Protection (Impact of Proposals) Act 1974, including reference to judicial decisions. The law relating to procedure and an introduction to the law of evidence.

BS395  Managerial Economics  
Three hours per week for two semesters  
A final-year subject in the diploma course in applied chemistry  
The course involves the development and integration of concepts and principles from the fields of management theory, economics and accounting with particular reference to decision-making and policy formulation within the modern industrial firm.

Textbooks  
Samuelson, Paul A. Economics. 2nd Australian edn, Sydney, McGraw-Hill, 1975  
Webber, R.A. Management. Homewood, Ill., Irwin, 1975

References  
To be advised by lecturer.

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.

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 in court.

BS499  Law  
Sixty-three hours in one semester  
Prerequisite, BS390  
A third-year subject in the diploma course in applied science (environmental health).  
An examination of legislation relevant to the health surveyor and to environmental health protection. Particular problem areas, e.g. noise control, water pollution will be examined in detail. Constraints upon administrative action, administrative and judicial review. Relevant areas of the law of evidence are examined and applied in practical application to a mock trial.
CE233  Town and Country Planning

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

An introduction to town planning techniques, Victorian planning structure and legislative 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.

CE235  Health Engineering

Three hours per week for one semester

A second-year subject in the diploma of 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
Bernoulli’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 formulas; use of charts for pipe selection. Introduction to drainage system design. Open drains = Manning’s formula.

Sewerage
Volumes and composition of sewage. Collection methods, plumbing details. Sewers: pipe location, grade, capacity, materials, appurtenances. The decay cycle.

Sewage purification: primary, secondary and tertiary treatment processes; activated sludge process; lagoons. Septic tanks: principles of operation, construction, maintenance, effluent disposal, sand filters. Small sewage treatment plants; design and operation of treatment elements.

References
To be advised by the lecturer.

CE401  Health Engineering

Three hours per week for one semester

A final-year subject in the diploma of 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. Introduction to slope stability analysis.

Solid waste disposal
Volumes and composition of solid wastes from domestic, commercial and industrial sources: collection, transport and disposal methods; sanitary landfill, incineration, pyrolysis, composting.

Stream pollution
Sources and nature of polluting substances, effect on bodies of natural water, oxygen balance. Streeter-Phelps’s 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.

EA122  Industrial Processes (Introduction)

One hour per week for one semester

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

An introduction to industry with special reference to selected industries; the handling and storage of raw materials, intermediate and finished products, waste products and by-products; Industrial flow diagrams; toxicity, health and safety problems, health and safety precautions.

Prescribed texts

EA223  Industrial Chemical Processes

Three hours per week for one semester

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

A study of the processes involved in industrial chemical processes with special attention to by-products and waste flows. The subject comprises:

(a) industrial chemistry. Transport of materials — solids, liquids, gases — size reduction, mixing, mechanical separation, heat transfer, evaporation, mass transfer, distillation, absorption, liquid — liquid extraction, leaching, adsorption, ion exchange, crystallisation, drying, chemical process reactions.

(b) water and waste-water treatment. Treatment of water for process use — chemical, ion exchange, etc. — treatment of waste water — sedimentation, coagulation, filtration, ion exchange, biological processes such as activated sludge, trickling filters, etc. water cooling, humidification, dehumidification, etc.

(c) air pollution control. Dust removal by sedimentation, bag filters, cyclone separators, electrical precipitators, dust washers, venturi scrubbers, etc. Odours and toxic materials will be discussed briefly as a preparation for a study later in the course.

EA321  Industrial Processes

Three hours per week for one semester

Prerequisite. EA223

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

A continued study of the processes involved in industrial chemistry, with special attention to by-products and waste flows. The subject comprises:

(a) industrial chemistry — description of some major industries and their environmental problems;

(b) case histories from industrial experience;

(c) discussion of relevant environmental problems of current public interest;

(d) introduction to industrial safety and hygiene in chemical plants.
EA421 Industrial Processes
Four hours per week for one semester
Prerequisite: EA321
A final-year subject in the diploma course in applied science (environmental health).
A continued study of the processes involved in industrial chemistry, with specific attention to by-products and waste flows. The subject comprises:
(a) industrial chemistry — a description of some major industries and their environmental problems;
(b) case histories from industrial experience;
(c) discussion of relevant environmental problems of current public interest;
(d) industrial safety and hygiene in chemical plants;
(e) occupational safety, health and hygiene; factors influencing behaviour and safety in the work place.

ED101 Engineering Drawing and Sketching
Three hours per week for one semester
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
A first-year subject in the diploma course in applied science (environmental health).
A continuation and extension of the topics of ED101.

EE421 Digital Electronics
Sixty hours in one semester, comprising approximately forty hours of lecture/tutorial work and twenty hours of laboratory work.
A subject of semester three of the graduate diploma course in scientific instrumentation.

EE421 Digital Electronics
Seventy hours in one semester, comprising approximately thirty-five hours of lecture/tutorial work and thirty-five hours of laboratory work.
A subject of semester two of the graduate diploma course in scientific instrumentation.


References
Malmstadt, H.V. and Encke, C.G. Digital Electronics for Scientists. N.Y., Benjamin, 1969

Substantial use will be made of component manufacturers' information.

EE520 Programming Dedicated Processors
Forty hours in one semester, comprising approximately twenty hours of lecture/tutorial work and twenty hours of laboratory work.
A subject of semester three of the graduate diploma course in scientific instrumentation.

References

Substantial use will also be made of various manufacturers' literature.

EE541 Control Systems
Four hours per week for one semester
A subject of the graduate diploma course in biomedical engineering.


References
EE542 Applications of Computer Devices

Four hours per week for one semester

A subject of the graduate diploma course in biomedical 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 MCS85 architecture and applications. Instruction set and peripheral chip functions.

Data transmission methods: CCITT V24, RS232, IEEE488 general purpose interface bus.

Computer peripherals: graphic output techniques, Intelligent peripherals, bulk storage.

PDP11 minicomputer: PDP11 architecture and instruction set. PDP11 data acquisition example: A/D conversion, real-time sampling, multiplexing, interrupts, effects of word length and sampling rate.

Commercially available data acquisition modules.

Review: comparison of features and limitations of other microcomputers and minicomputers.

ME349 Environmental Engineering

Three hours per week for one semester

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

Topics covered include:

(a) mechanical engineering plant. Principles and standards to be met by heating, ventilating, lighting, air-conditioning, refrigeration, steam and high pressure hot water plants, stand-by power plants, combustion and boiler plant -- tests on boiler plants such as the Ringleman, O2, CO and CO2 tests. Recognition and analysis of problems, reports and recommendations, maintenance of records;

(b) vibration and acoustics, environmental noise control.

ME449 Environmental Engineering

Three hours per week for one semester

This is a 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.
<table>
<thead>
<tr>
<th>Courses offered in Graphic Design</th>
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<tbody>
<tr>
<td>Undergraduate courses</td>
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<tr>
<td>— Diploma in Graphic Design</td>
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<tr>
<td>— Degree in Graphic Design</td>
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<td>— Subject details</td>
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<table>
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<tr>
<th>Courses offered in Film and Television</th>
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<tr>
<td>Undergraduate course</td>
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<td>— Diploma in Film and Television</td>
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<tr>
<td>Postgraduate course</td>
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<tr>
<td>— Graduate Diploma in Film and Television</td>
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<tr>
<td>— Subject details</td>
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</tbody>
</table>

General Information
Faculty of Art

Dean
I. McNeilage, DipArt, TTTC

Academic Staff

Department of Graphic Design

Head
R.A. Francis, DipArt, TTTC

Principal Lecturer
G. Dance, DipArt

Senior Lecturers
P.S. Allen, BA(Graphic Design), TTTC
A. Campbell-Drury, FIP, AIA
D.G. Murray, BA(Graphic Design), TTTC

Lecturers
D. Bryans, BA(Graphic Design), TTTC
B. Edwards, BA(Graphic Design), TTTC
C. Hocking, BA(Graphic Design), TTTC
B.D. Martin, BA(Graphic Design), AIDIA, TTTC
W.G. Thomas, DipArt, BEd

Principal Tutor
P. Gajree, FIIP

Senior Tutor
C.J. Austin, DipArt

Art courses offered

Full-time courses in the Faculty of Art are offered as follows:

Department of Graphic Design
Degree of Bachelor of Arts (Graphic Design)
Diploma of Art (Graphic Design)

Department of Film and Television
Diploma of Art (Film and Television)
Graduate Diploma in Applied Film and Television

Undergraduate courses: degree, diploma
Applicants should have passes in any four Higher School Certificate subjects or have the equivalent qualifications. 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, 11 Queens Road, Melbourne 3004, telephone 267 1877. 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.

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 (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.

Course structure

<table>
<thead>
<tr>
<th>Semester</th>
<th>First year</th>
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<tbody>
<tr>
<td>Hours</td>
<td>AR101</td>
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<td>AR111</td>
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<td>AT188</td>
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<td>BS193</td>
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<tr>
<th>Second year</th>
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<tbody>
<tr>
<td>AR201</td>
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<tr>
<td>AR211</td>
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<tr>
<td>AT294</td>
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<td>AR240*</td>
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<tr>
<th>Third year</th>
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<tr>
<td>AR301</td>
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<td>AR320</td>
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<tr>
<td>AT391</td>
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<tr>
<td>AR340*</td>
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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')

Degree of Bachelor (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

<table>
<thead>
<tr>
<th>Semester</th>
<th>First and second year</th>
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<tbody>
<tr>
<td>Hours</td>
<td>AT195*</td>
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<td>AR321*</td>
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<td>AR303</td>
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<td>AR341</td>
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<tr>
<th>Third year</th>
<th>(full-time in industry)</th>
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<tbody>
<tr>
<td>AT195*</td>
<td>34</td>
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<tr>
<td>AR321*</td>
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<tr>
<td>AR303</td>
<td>34</td>
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<tr>
<td>AR341</td>
<td>34</td>
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</tbody>
</table>

*Subjects to be taken by part-time study

Fourth year  
(full-time at the institute)

| AR410      | 306         |
| BS491      | 51          |
| AT492      | 34          |
| AR441      | 34          |

Fourth year conversion diploma/degree

| AR410      | 306         |
| BS492      | 51          |
| AT492      | 34          |
| AR441      | 34          |

Explanation of course structure

Conversion degree

Cooperative degree

Distinction between diploma and degree courses

The diploma stream is for a student with specific abilities, i.e. as an executant working to specific briefs and producing work of a unique and individual character.

The degree course requires a student to have a greater ability in conceptual thinking, together with proven abilities in handling complex problems in visual communication. Maturity, responsibility, leadership, planning and organisational skills are expected but not necessarily unique technical skills of a high order.
Graphic Design diploma/degree subject details

First year

AR101 Assigned Projects 1
Twenty hours practical per week for two semesters
Prequisite: nil
Assessment is continuous

Assigned Projects refer to a co-ordinated three-year work program with specific emphasis on an individual approach to solving communication problems principally of a graphic nature. Students are encouraged to develop their own personal style through soundly reasoned, skillfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group 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 aimed at cultivating visual awareness through study of controlled lighting, spatial relationships, form, product and fashion photography, photojournalism, photo-reproduction techniques (e.g., developing and printing, pictorial editing), various colour processes and 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
Consult with lecturer before buying textbooks

Recommended reading
Craig, J. Designing with Type. Revised edn. N.Y., Watson Guptill, 1980
The Partners of Pentagram. Living by Design. Lond., Lund Humphries, 1978

AR111 History of Arts 1
Two hours per week for two semesters
Prequisite: 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 copy writing, design rationales and publications.

BS193 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 and computer phototypesetting systems used in the second and third year of the course.

Second year

AR201 Assigned Projects 2
Twenty hours practical per week for two semesters
Prequisite: 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, marketing, merchandising and public relations, and for non-commercial areas such as education and community organisations. Study areas include—design, photography, methods of producing, 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, typesetting, 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.

AR211 History of Arts 2
Six hours per week for two semesters
Prequisite: AR140. Result of Studies 1 Assessment is continuous

A study of the influences within the arts in contemporary society including aspects of stylistic development within the graphic arts

AT294 Social Science 2
Two hours per week for two semesters
Assessment is continuous

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. Thus an active participation in seminar discussion 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 behavior and physiological factors relevant to personal growth and development such as relaxation, nutrition and stress reduction.

Textbooks
Diploma in Graphic Design

Third year

AR301 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.

AR320 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, copying, proof-reading, copy preparation techniques, practical exercises in direct press 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.

Preliminary reading
Reading and other resources will be given where appropriate

Degree in Graphic Design

Third year

AR321 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), electrostatic and heat transfer. Studies of paper and other stock.

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.

AR303 Industrial year
Two semesters industrial experience
Prerequisite, AR240 Result of Studies 2
Assessment is continuous

(See ‘Y’ chart.)

Fourth year

AR410 Assigned Projects 4
Eighteen hours per week for two semesters
Prerequisite, AR341 Result of Studies 2
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 2
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 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.

AT492 Theory of Communications
Two hours per week for two semesters
Prerequisite, AR341 Result of Studies 2
Assessment is continuous

In this subject, the aim is to expand the graphic artist's range of communication media relevant to their profession. It includes examination and discussion of techniques of present-day media, film, T.V. and video, radio, theatre, newspapers, publishing and other print media.

Specialist topics covered include: media ownership, news reporting and current affairs interviews, children's T.V. 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.
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 operation.

Course structure

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<tr>
<th>Semester</th>
<th>First year</th>
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<td></td>
<td>AR151</td>
<td>Assigned Projects 1</td>
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<td>AR162</td>
<td>History of Cinema 1</td>
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<td></td>
<td>AR141</td>
<td>Script Writing 1</td>
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<td></td>
<td>AR171</td>
<td>*Result of Studies 1</td>
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<td>AR251</td>
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<td>AR241</td>
<td>Script Writing 2</td>
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<tbody>
<tr>
<td>AR351</td>
<td>Assigned Projects 3</td>
</tr>
<tr>
<td>AR362</td>
<td>History of Cinema 3</td>
</tr>
<tr>
<td>AR365</td>
<td>Methods of Production</td>
</tr>
<tr>
<td>AR171</td>
<td>*Result of Studies 3</td>
</tr>
</tbody>
</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 students' 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.

Course structure

<table>
<thead>
<tr>
<th>Semester</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AR400</td>
<td>Assigned Projects (2 semesters)</td>
</tr>
<tr>
<td>AR401</td>
<td>*Result of Studies</td>
</tr>
</tbody>
</table>
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>Stream</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>12</td>
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<tr>
<td>Film</td>
<td>6</td>
</tr>
<tr>
<td>Animation</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

In the three areas of specialisation offered, it is not possible to transfer from one stream to another.

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.

Film and Television diploma subject details

First year

AR151 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.

AR162 History of Cinema 1
Two hours per week for two semesters
Prerequisite, 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 the subject, assignments may be presented in written, audio, video or film form.

AR141 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

AR251 Assigned Projects 2
Twenty hours practical per week for two semesters
Prerequisite, AR171 Result of Studies 1
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.
**AR262 History of Cinema 2**
Two hours per week for two semesters
Prerequisite, AR271 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.

**AR241 Script Writing 2**
Two hours per week for two semesters
Prerequisite, AR271 Result of Studies
Lectures cover the basic principles of dramatic structure such as the 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 their being produced as assigned projects.

**Third year**

**AR351 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/camera titles
- 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.

**AR362 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 1 and 2 in greater depth. Assignments are expected to relate these issues to students' vocational preferences and expectations.

**AR365 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 subject details**

**AR400 Assigned Projects**
Twenty-one hours per week for two semesters
Prerequisite, first degree or diploma in any discipline
Assessment is continuous
All three streams 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.

**Scholarships and awards**

**USP Needham Scholarship**
Awarded to an outstanding student proceeding to the second year of the diploma of art, film and television course. Value: $150.

**The Margery Withers and Richard McCann Scholarship**
Available for the second year of the diploma of art, graphic design course. Value: $100.

**FCB/SPASM Scholarship**
Two scholarships are available for the third year of the diploma of art, film and television course. Value: $250 each.

**The Sonargraphics Audio-visual Grant**
Awarded annually at the end of first semester to the best production group in the third year Graphic Design audio-visual elective. The grant is to be used for production costs to make a specific audio-visual program in the second semester of third year. Value: $1000.
Faculty of Arts

Dean
L.A. Kilmartin, MA, MAPsS

Sub-Dean
PF. Thompson, BA, DipEd

Faculty Secretary
E.A. Williams, BA, DipCrim

Administrative Officer
M. Simpson

Office of the Dean
J.E. Baxter, MS, BA, BEd

Academic Staff

Department of Humanities

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P.G. Kent, BA, MEd

Senior Lecturers
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P. Excell, BA(Hons)
P.J. Fleming, MA
A. Hakeem, MA
R.L. Love, BSc, CHPS, PhD
J. O'Hara, BA(Hons)
T.P. Ryan, BA(Hons), BEd

Senior Tutor
M.K. Hicks, BSc

Department of Languages

Head
B. Warren, MA, DipEd

Senior Lecturer
N. Fukushima, BA, DipEd

Lecturers
C. D'Aprano, BA, ATTC, DipAdvStud
T. Machida, BA, BEd
H.E. Marriott, MA, MEd
M.M. Masini, BA(Hons), DipEd

Senior Tutor
L.A. Hougaz, BA, DipEd

Department of Liberal Studies

Head
PF. Thompson, BA, DipEd

Senior Lecturer
A.G. Browne, BA, BEd

Lecturers
P.E. Mitchell, BA(Hons), CertEd
G.C.J. Morieson, BA, DipSocStud, GradDipEd
R.H. Smith, BA, TPTC, MACE
M.C. van Geloven, Drs, MAPsS

Department of Psychology

Head
M.A. Howe, MA, FAPsS, FIPMA

Senior Lecturers
J.P. McLennan, MA, GradDipEd, MAPsS
J.F. Wangeman, MA, BCom, BEd, MAPsS

Lecturers
R.H. Cook, BSc(Hons), MEd, MAPsS
G.H. Gotts, MSc, MAPsS
R. Ho, MSc, DPhil, MAPsS
S. Kelly, BA, DipEd, MAPsS
B.C.H. Ong, MSc, PhD
C.D. Robinson, MA, MAPsS

Senior Tutors
R.S. Gold, BSc, DPhil
J.G. Simmonds, BA, MEd, MAPsS

Department of Social and Political Studies

Chairman
R.R. Smith, MA, LLB

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T.W. Burke, MSc, BEc(Hons)
D.Y. Mayer, MA, LLB, GradDipEd
G.G. Nichols, BA
I.X. Walsh, BA, BEd
M.G. Wulff, MA, PhD

Lecturers
T.J. Castleman, PhD
S. de Boer, BA(Hons), TPTC, MACE
J.S. Humphreys, BA(Hons), DipEd, PhD
L.I. Hancock, BA(Hons), PhD
S. Lakha, BSc(Hons), GradDip Urban Studies
K.J. Rowley, BA(Hons)
J. Schmid, MA
R.C. Tanter, MA

Senior Tutor
G.B. Asher, BA(Hons), PhD
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Arts courses offered
Diploma of Arts
(for students who first enrolled prior to 1982)

Bachelor of Arts
Graduate Diploma in Applied Social Psychology
Graduate Diploma in Urban Sociology
Graduate Diploma in Japanese

Undergraduate courses
Bachelor of Arts/Diploma of Arts
All students enrol for the course leading to the award of Bachelor of Arts.

Prior to 1982 all students initially enrolled in subjects common to both the Bachelor of Arts and Diploma of Arts courses. On completion of the equivalent of two years of full-time study these students, if they have satisfied the prerequisites for stage three subjects, are qualified to proceed to degree or diploma studies, depending upon their preference.

Full-time
Both the Bachelor of Arts and Diploma of Arts courses require three years of full-time study, during which 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 course is designed to develop skills in the collation and analysis of information, a high level of competence in various specialised oral and written forms of communication and an ability to apply theoretical concepts in the search for practical solutions to problems.

Students may select courses which will be of particular value in following a career in such fields as administration, personnel, publishing, public relations, and research services. After further short-term courses graduates may gain qualifications to become, for example, practising psychologists, urban sociologists, teachers or librarians.

Eligibility
Applicants in the following categories will be considered for admission to the Bachelor of Arts degree course, although quota restrictions may prevent offers being made to all eligible candidates:

• applicants with passes (D or above) in four VISE Year 12 (or HSC) subjects, including English, or a schools’ sixth form tertiary entrance certificate;
• applicants with equivalent interstate or overseas studies;
• applicants who have successfully completed an approved tertiary orientation program, including English; and
• mature-age applicants without the formal qualifications listed above, who have the ability to cope with tertiary study. The minimum age for these applicants is 21 years.
Applications

Applicants seeking a full-time 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. Usually, deferments will be valid for a maximum period of one year and only for entry to the course for which the offer was made.

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. Usually, 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 more often unspecified exemptions are 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 Records Office and lodging it with the Faculty of Arts Administrative Officer or Faculty Secretary.

A reference copy of the current Faculty of Arts policy document on Recognition of Studies completed outside the Swinburne Faculty of Arts is available at the Faculty of Arts Office.

Teachers in the Victorian Education Department are advised to consult the Teachers Tribunal about seeking exemptions from degree and diploma courses on the basis of teacher training qualifications, as the Tribunal 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.

Diploma of Arts course requirements

(Applicable only to students who enrolled for the first time prior to 1982.)

In order to complete a diploma, a student must:
(a) gain passes in subjects totalling a unit value of twenty-four from stages one, two and three;
(b) complete either two majors, or one major and two minors;
(c) major in one of the following: Italian, Japanese, Media Studies, Political Studies, Psychology, Sociology.

Degree selection

(Applicable only to students who first enrolled prior to 1982.)

To be eligible for degree selection a student must have passed the prerequisites for the proposed stage three degree subjects. Usually, students enrolling for stage three degree studies will enrol for the diploma/degree and degree stage three subjects under the appropriate codes. Students converting a Diploma of Arts to a Bachelor of Arts must consult course advisers about their enrolment.

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 —
   Economics
   Historical and Philosophical Studies
   Italian
   Japanese
   Literature
   Media Studies
   Political Studies
   Psychology
   Sociology
   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 degree level 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

A major study, usually restricted to a single subject area, is one comprising a full year of study at stage three and stage two, preceded by either a full year or semester subject at stage one.
In economics, Italian, Japanese, psychology and sociology, 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 relevant head or chairman of department.

Studies constituting minor strands
A minor study usually comprises a full year of study in a subject at stage two, preceded by either a full year or semester subject at stage one.

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 or Sub-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 or Sub-Dean, 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 or Sub-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.

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.

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 or Sub-Dean of Faculty.

Amendment to enrolment
Students may amend their subject selection by attending an Amendment Session and completing an Amendment to Enrolment form which must then be approved by the Dean (or nominee) of the Faculty of Arts and lodged at the Student Records Office. 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 15 April 1983. For a subject which concludes at the end of the second semester — not later than Friday 16 September 1983. (For further details see under the section headed 'Enrolment regulations'.)

Leave of absence from all study
Students who have enrolled in the Bachelor of Arts degree course and who wish to apply for leave of absence should lodge a completed Amendment to Enrolment form at the Faculty of Arts Office (BA915) or at the Student Records Office. When an application is approved the student concerned will be notified in writing by the Faculty Secretary. Enrolment in all subjects for the duration of the leave will be cancelled automatically.

Students who wish to commence leave of absence after the specified date will be recorded as having failed those subjects or units for which they were enrolled unless special permission to cancel the enrolment has been given by the Dean, Faculty of Arts. For a subject which concludes at the end of the first semester — not later than Friday 15 April 1983. For a subject which concludes at the end of the second semester — not later than Friday 16 September 1983. (For further details see under the section headed 'Enrolment regulations'.)

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 (BA 915) or the Student Records Office and return their identity cards. (For further details see under the section headed 'Enrolment regulations'.)

Reading guides
In most subjects convenors will issue detailed reading guides or recommended reference lists during the first week of classes. However, reading material is listed under individual subject entries according to the following definitions:
Pre liminary 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 (or a Diploma of Arts).

Faculty of Arts subject details are listed in numerical order, by stage grouping 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., AT142, 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 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.

Subject codes
Since 1980, new subject codes have been adopted. The prefix AT replaces the previous GS prefix for all subjects taught by the Faculty of Arts. The digits following the prefix reflect, in order, the stage at which the subject is offered, the subject area to which the subject relates, and the individual subject title. It is most important to refer to the correct subject code(s) when completing any Enrolment Amendment to Enrolment forms.

Time allocations per week
Each semester subject runs for an average of fifteen weeks. Usually in stage one a student spends approximately ten hours a week, including class time, on each semester subject studied. Most stage one and two subjects require three or four hours per week in class. Language subjects and stage three subjects require more.

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.

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
Italian
Japanese

Department of Psychology
Psychology

Department of Liberal Studies
Subjects for students of other faculties only.

Department of Social and Political Studies
Political studies
Sociology

Each department has a head or chairman and enquiries may be directed to the secretaries.

Scholarships and Prizes

Study in Japan Scholarship
Awarded to assist a student to complete Japanese3 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.
**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.

An example of a degree major biased towards history and philosophy of science is AT106 or AT107, AT205, AT208, AT304, AT305, AT306, AT307. A philosophy-oriented degree major is AT102, AT202, AT204, AT301, AT302, AT306, AT307, and one of a variety of integrated degree majors might be AT102 and/or AT106, AT202, AT205, AT304, AT305, AT306, AT307.

Students are advised to examine carefully the prerequisites for stage three subjects before planning their courses.

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**Diploma degree subjects offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>AT102</td>
<td>Introduction to Philosophy</td>
<td>1</td>
</tr>
<tr>
<td>AT106</td>
<td>History of Ideas</td>
<td>1</td>
</tr>
<tr>
<td>AT107</td>
<td>Theories of the Universe</td>
<td>1</td>
</tr>
<tr>
<td>AT202</td>
<td>Moral and Political Philosophy</td>
<td>1</td>
</tr>
<tr>
<td>AT204</td>
<td>Mind, Language and Thought</td>
<td>1</td>
</tr>
<tr>
<td>AT205</td>
<td>Technology and Society</td>
<td>1</td>
</tr>
<tr>
<td>AT208</td>
<td>Nature and Human Nature</td>
<td>1</td>
</tr>
<tr>
<td>AT301</td>
<td>Aesthetics, Education and Reason</td>
<td>1½</td>
</tr>
<tr>
<td>AT302*</td>
<td>Aesthetics, Education and Reason</td>
<td>½</td>
</tr>
<tr>
<td>AT304</td>
<td>Science and Change</td>
<td>1½</td>
</tr>
<tr>
<td>AT305*</td>
<td>Science and Change</td>
<td>½</td>
</tr>
<tr>
<td>AT306</td>
<td>Philosophy of Science</td>
<td>1½</td>
</tr>
<tr>
<td>AT307*</td>
<td>Philosophy of Science</td>
<td>½</td>
</tr>
</tbody>
</table>

*Not available for diploma students

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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 AT110 at stage one, followed by AT210 at stage two, then AT310 and AT311 at stage three. Normally, AT310 is completed prior to, or concurrently with, AT311.

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**Diploma degree subjects offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>AT110</td>
<td>Italian 1</td>
<td>3</td>
</tr>
<tr>
<td>AT210</td>
<td>Italian 2</td>
<td>1</td>
</tr>
<tr>
<td>AT310</td>
<td>Italian 3</td>
<td>3</td>
</tr>
<tr>
<td>AT311*</td>
<td>Italian 3</td>
<td>1</td>
</tr>
</tbody>
</table>

*Not available for diploma students
With the deepening of relations between Australia and Japan on many levels, it is desirable that a study of Japanese language, both spoken and written, be undertaken by a greater number of Australians. Furthermore, it is important that knowledge and understanding of Japan is increased in this country. This course trains students to communicate effectively in Japanese and it also provides the opportunity to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.

The subjects AT112, AT212, AT312 and AT313 form a degree major in Japanese. Usually, AT312 is completed prior to, or concurrently with AT313.

Students intending to major in Japanese should enrol in the first instance in AT112 Japanese 1.

Students undertaking a major in Japanese are highly recommended to enrol also for Communication in Japanese A and B, which provide an essential background to Japanese language and culture.

AT114, Communication in Japanese A which is offered in second semester, while simultaneously taking AT112, Japanese 1.

AT215, Communication in Japanese B which is offered in first semester, while simultaneously taking AT212 Japanese 2.

Both subjects are available also to those not undertaking the full Japanese language course.

AT247, Modern Japan, offered by the Social and Political Studies Department, is also highly recommended.

### Diploma/degree subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>AT112</td>
<td>Japanese 1</td>
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<tr>
<td>AT114</td>
<td>Communication in Japanese A</td>
<td>1</td>
</tr>
<tr>
<td>AT212</td>
<td>Japanese 2</td>
<td>3</td>
</tr>
<tr>
<td>AT215</td>
<td>Communication in Japanese B</td>
<td>1</td>
</tr>
<tr>
<td>AT312</td>
<td>Japanese 3</td>
<td>3</td>
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<tr>
<td>AT313*</td>
<td>Japanese 3</td>
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</tr>
</tbody>
</table>

*Not available for diploma students

### 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 seventeenth and eighteenth century writing, including many 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 degree major consists of one or more of AT120, AT122, AT134, at stage one, followed by AT220 and AT222, at stage two, followed by AT320 and AT321 and AT322 and AT323, at stage three.

AT222 may be taken before or at the same time as AT220. AT320 must be taken before AT321 or concurrently with it. AT322 must precede or be taken concurrently with AT323. However, the pair of subjects AT320 and AT321 do not have to precede the pair AT322 and AT323.

### Literature/media studies

Separate majors are offered in each of these subject areas; however a stage one semester subject AT134 Contemporary Writing and Production, is offered jointly. This subject is an alternative to AT122 Nineteenth Century Literature and AT133 Aesthetics of Media, and is recognised as a prerequisite to stage two studies in each of these subject areas. It should be noted that AT134 counts as one stage one subject in either literature or media studies, but not both. Students may not enroll for all three of AT122, AT133 and AT134 subjects. It may not be possible to offer AT134 in every year. Please check on its availability when enrolling.

### Diploma/degree subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
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<td>Twentieth Century Literature</td>
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</tr>
<tr>
<td>AT122</td>
<td>Nineteenth Century Literature</td>
<td>1</td>
</tr>
<tr>
<td>AT1341</td>
<td>Contemporary Writing and Production</td>
<td>1</td>
</tr>
<tr>
<td>AT220</td>
<td>Elizabethan and Jacobean Literature</td>
<td>1</td>
</tr>
<tr>
<td>AT222</td>
<td>Seventeenth and Eighteenth Century Literature</td>
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### Stage 3

<table>
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<tr>
<td>AT320</td>
<td>L-terature of the United States</td>
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<tr>
<td>AT321*</td>
<td>L-terature of the United States</td>
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</tr>
<tr>
<td>AT322</td>
<td>Australian L-terature</td>
<td>1½</td>
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<tr>
<td>AT323*</td>
<td>Australian L-terature</td>
<td>½</td>
</tr>
</tbody>
</table>

*Not available for diploma students

†Not offered in 1983
Media studies

The approach in this course is essentially analytical and critical, rather than production-oriented. In 1983 all first-year students will undertake a foundation subject — AT131 — which will examine how the media produce meanings and how we understand and interpret media communication. AT133 and AT134 are not being offered in 1983, though either is an acceptable prerequisite for the stage two subjects. AT230 and AT231 examine political, social and ethical issues concerning the role of mass media in society. Three major components of study are taught at stage three level: a full-year subject in radio aesthetics and production, and work in cinema studies and media public policy. The course offers students an increased practical knowledge of communication, a broader awareness of media theory and processes, and a greater appreciation of the aesthetics of media, particularly film, television and radio. The media studies degree major comprises one subject at stage one (AT131 or AT133 or AT134), two subjects at stage two (AT230 and AT231) and two pairs of subjects at stage three (AT334 and AT335 plus AT336 and AT337).

Media studies/literature

Separate majors are offered in each of these subject areas; however a stage one semester subject AT134 Contemporary Writing and Production, is offered jointly. This subject is an alternative to AT133 Aesthetics of Media and AT129 Nineteenth Century Literature, and is recognised as a prerequisite to stage two studies in each of these subject areas. It should be noted that AT134 counts as one stage one subject in either media studies or literature, but not both. Students may not enrol for all three of AT133, AT134 and AT129 subjects. It may not be possible to offer AT134 in every year, but students will be advised of its availability at the time of enrolment.

Diploma/degree subjects offered

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>Stage 1</td>
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<tr>
<td>AT131</td>
<td>Introduction to Media</td>
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</tr>
<tr>
<td>AT133</td>
<td>Aesthetics of Media</td>
<td>1</td>
</tr>
<tr>
<td>AT134</td>
<td>Contemporary Writing and Production</td>
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<td>Stage 2</td>
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<tr>
<td>AT220</td>
<td>Print Media</td>
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<tr>
<td>AT231</td>
<td>Australian Mass Media</td>
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<td>Stage 3</td>
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</tr>
<tr>
<td>AT334</td>
<td>Television Aesthetics and Radio Production</td>
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</tr>
<tr>
<td>AT335</td>
<td>Television Aesthetics and Radio Production</td>
<td>½</td>
</tr>
<tr>
<td>AT336</td>
<td>Media Public Policy</td>
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<tr>
<td>AT337</td>
<td>Media Public Policy</td>
<td>½</td>
</tr>
</tbody>
</table>

*Not available for diploma students
†Not offered in 1983

Political Studies

Political studies is concentrated into two principal areas, Australia and Asia. The subjects offered set the political and historical dimensions of the societies studied in the broad economic and social contexts.

Students may choose from a variety of subjects, but there are three themes around which they may decide to concentrate their studies. They are:

- the politics of modern industrial society with an added emphasis on Australia e.g. AT140, AT141, AT240, AT241, AT340/AT341 and AT342/AT343.
- social and political change in Asia e.g. AT148, AT149, AT247, AT248, AT344/AT345 and AT346/AT347.
- the political economy of underdevelopment e.g. AT144, AT244, AT247 or AT248, AT344/AT345 and AT346/AT347.

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 major and 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 two pairs of semester subjects at stage three.

A degree double major consists of at least two semester subjects at stage one, at least four semester subjects at stage two and four pairs of 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 AT142 is offered at stage one only and cannot form part of a major or minor in political studies.

**Diploma/degree subjects offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>Stage 1</td>
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<td></td>
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<tr>
<td>AT140</td>
<td>Australian Politics</td>
<td>1</td>
</tr>
<tr>
<td>AT141</td>
<td>Foundations of Modern Politics</td>
<td>1</td>
</tr>
<tr>
<td>AT142</td>
<td>Law and Society</td>
<td>1</td>
</tr>
<tr>
<td>AT144</td>
<td>Australia and Underdevelopment</td>
<td>1</td>
</tr>
<tr>
<td>AT146</td>
<td>Foundations of the Third World</td>
<td>1</td>
</tr>
<tr>
<td>AT148</td>
<td>Australia and South-East Asia</td>
<td>1</td>
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<tr>
<td>AT149</td>
<td>Contemporary South-East Asian History</td>
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<tr>
<td>AT240</td>
<td>Advanced Australian Politics</td>
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<tr>
<td>AT241</td>
<td>Political Sociology</td>
<td>1</td>
</tr>
<tr>
<td>AT244</td>
<td>Europe, Capitalism and the Third World</td>
<td>1</td>
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<tr>
<td>AT341</td>
<td>Socialism and Development in China</td>
<td>1</td>
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<tr>
<td>AT247</td>
<td>Modern Japan</td>
<td>1</td>
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<tr>
<td>AT248</td>
<td>History of Modern China</td>
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<td>Stage 3</td>
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<tr>
<td>AT340</td>
<td>Public Policy in Australia</td>
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<td>AT341*</td>
<td>Public Policy in Australia</td>
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<tr>
<td>AT342</td>
<td>Comparative Politics — The Soviet Union</td>
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<tr>
<td>AT343*</td>
<td>Comparative Politics — The Soviet Union</td>
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<tr>
<td>AT344</td>
<td>Comparative Politics — China</td>
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<tr>
<td>AT345*</td>
<td>Comparative Politics — China</td>
<td>½</td>
</tr>
<tr>
<td>AT346</td>
<td>Colonialism, Race and Underdevelopment</td>
<td>India</td>
</tr>
<tr>
<td>AT347*</td>
<td>Relations between Japan and Asia</td>
<td>½</td>
</tr>
</tbody>
</table>

*Not available for diploma students
†Not offered in 1983
**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 places emphasis 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 the subject are required to take AT150 Psychology 1A and AT151 Psychology 1B. Each of these subjects comprises lectures, practical work and statistics.

In stage two, in addition to AT251 Psychology 2A and AT250 Psychology 2B, it is highly recommended 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. Students completing stage three of the psychology degree major are required to take AT351 and either AT350 or AT352 in the first semester followed by AT354 and either AT353 or AT355 in second semester.

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 second year of their course. The double major includes AT150, AT151, AT250, AT251, SM278, SM279 and all six of the stage three subjects in psychology which are listed above, plus 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 (APS). The minimum academic requirement for associate membership of the APS is completion of an approved four-year program of psychological study. The Swinburne Bachelor of Arts psychology major has APS approval as a sequence of three years' study and, to become eligible for associate membership in the APS, graduates must then complete an approved fourth-year course. (A list of approved courses is published in each volume of the Australian Psychologist.) The Swinburne Graduate Diploma in Applied Social Psychology is an accredited fourth-year course.

**Diploma/degree subjects offered**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
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<tr>
<td>AT150</td>
<td>Psychology 1A</td>
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<td>AT151</td>
<td>Psychology 1B</td>
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<td>Stage 2</td>
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<tr>
<td>AT250</td>
<td>Psychology 2B</td>
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<tr>
<td>AT251</td>
<td>Psychology 2A</td>
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<tr>
<td>SM279</td>
<td>Design and Measurement 2B</td>
<td>1</td>
</tr>
</tbody>
</table>

*Not available for diploma students

**Sociology**

The sociology course is designed to provide an understanding of the social world and how it changes. Many theories have been developed to further our understanding and there is now a great range of techniques available for studying social life.

During the course of a major in sociology, students are introduced to theories and techniques which help us to know more about social systems. 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 AT170 Sociology 1A and AT171 Sociology 1B.

At stage two, students are strongly advised to take AT271 Sociology 2B (Methodology of Social Research) if they intend to pursue degree studies in sociology. Two stage two subjects are required for a major or minor in sociology.

Students may enrol in either AT273 Sociology 2D or AT241 Political Sociology but not both.

At stage three, students completing a major must take AT370 Sociology 3A (Urban Sociology), offered in the first semester only; and may then choose either AT372 Sociology 3B (Organisational Sociology) or AT374 Sociology 3C (Minorities), offered as alternatives in second semester. In addition, degree students attend a two-hour seminar each week throughout the year. In first semester, the AT371 seminar deals with issues in empirical enquiry in sociology. In semester two the AT373 and AT375 seminars focus on a variety of contemporary issues.

For those students intending to pursue a career in applied sociology the Graduate Diploma in Urban Sociology is offered.

**Diploma/degree subjects offered**

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>Stage 1</td>
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<tr>
<td>AT170</td>
<td>Sociology 1A</td>
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</tr>
<tr>
<td>AT171</td>
<td>Sociology 1B</td>
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<td>Stage 2</td>
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</tr>
<tr>
<td>AT270</td>
<td>Sociology 2A</td>
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<tr>
<td>AT271</td>
<td>Sociology 2B</td>
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<tr>
<td>AT272</td>
<td>Sociology 2C</td>
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<tr>
<td>AT375*</td>
<td>Sociology 3C</td>
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</table>

*Not available for diploma students
Arts subject details

Stage one

AT102  Introduction to Philosophy
(Previously AT101 Introduction to Problems and Methods of Philosophy)
Four hours per week (three hours 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 judgements, 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
Russell, J.A. Reality, Knowledge and Value. N.Y., Random House, 1971

AT106  History of Ideas
(Previously AT105 Theories of Nature and Life)
Four hours per week (three hours evenings)
Prerequisite, nil
Assessment is continuous

This subject is a study of some aspects of the scientific imagination and its revolutionary impact on our lives. Special attention is given to theories about the nature of life, e.g. theories of evolution and their significance for the debate about man's place in nature.

Preliminary reading
Asimov, I. Wellsprings of Life. N.Y., New American Library, 1960

Textbooks
Please consult with lecturer before buying textbooks.

References
Theobold, D.W. Introduction to the Philosophy of Science. Lond., Methuen, 1969
Toulmin, S. and Goodfield, J. The Discovery of Time. Chicago, Midway, 1976

AT107  Theories of the Universe
Four hours per week (three hours 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

AT110  Italian 1
Eight hours per week (six hours evening)
Prerequisite, nil
Assessment is partly continuous, partly by examination

This is a practical introduction to the language. The systematic and progressive study methods are based on language laboratory facilities. A general introduction to the study of Italian civilization and the Italian way of life is given as well as lectures on Italian history. Students with proven ability in Italian may be required to undertake special studies in addition to prescribed course work.

References
Elia, P. I verbi italiani ad uso degli stranieri. 12th edn, Verona, Edizioni Scolastiche Mondadori, 1971

AT112  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 AT114 which is offered in second semester.

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

AT114  Communication in Japanese A
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.

References
AT120  Twentieth Century Literature
Four hours per week (three hours evening)
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
Mayhead, R. Understanding Literature Cambridge University Press, 1969

AT122 Nineteenth Century Literature
Four hours per week (three hours evening)
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 freedom from social concerns. Both English and European fiction and drama, and English poetry are studied.

Preliminary reading
Ar for AT120.

AT131 Introduction to Media
(This subject replaces AT130 Introduction to Communication Theory)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
This subject provides an introduction to media from several different theoretical and critical perspectives, as well as practical guidance to students in the use of various forms of communication. The study of written communication deals with the conventions of presentations of academic essays, technical reports, business correspondence, public relations and press releases, while oral communication exercises train students in public speaking and the presentation of tutorials, including the most effective use of a range of aids and audio-visual hardware.

Various theoretical frameworks are introduced as a basis for the study of media. These include the literary and aesthetic tradition, the social scientific approach, anti, where appropriate, areas of human communication theory. A selection of topics is made within each of these three contexts. For example, topics from human communication theory include interpersonal communication, such as interviewing forms and techniques; questions relating to meaning and interpretation are examined within the literary aesthetic approach, and notions of popular culture are explored as an introduction to the social scientific approach to media.

Recommended reading
Birdwell, D. and Thompson, K. Film Art: An introduction. Reading, Mass. Addison Wesley, 1979
Fiske, J. and Hartley, J. Reading television, London, Methuen, 1978

AT133 Aesthetics of Media
(This subject is not being offered in 1983)
Four hours per week (three hours evening)
Prerequisite, nil
Assessment is continuous
In this subject many different forms of media are examined—film, sound works, photography, art, music—in the context of the aesthetics of each particular medium. The qualities of a medium are explored: notions of film and reality, film adaptation from a literary source, home movies or super 8, aesthetics of photography, video as a medium, cartoonists and their craft, and the exploration of different sound works. Notions are investigated of the relationship between ideology and cultural products, and studies made of different artists working with a medium. Film theory and criticism is central to this subject, within an historical perspective of twentieth century critical frameworks; Eisenstein and montage, genres of Hollywood, Bunuel and surrealism, Italian neo-realism, Bergman and expressionism, French new wave. Students are involved with at least one minival or sound production—an audio-visual presentation, or super 8, black and white or colour photography, video or sound work. The emphasis in assessment is on verbal media assignments in an attempt to involve students with media hardware, in many different forms, wherever possible.

Recommended reading
Monaco, J. How To Read A Film London, Oxford University Press, 1977

Alternative course in literature/media studies

AT134 Contemporary Writing and Production
This subject is not being offered in 1983
It should be noted that this counts as one stage one subject in either literature or media studies, but not both. It is expected that restrictions will have to be placed on entrance quotas.

Four hours per week
Prerequisite, nil
Assessment is continuous
This subject is offered in second semester in the daytime only. It provides an examination of contemporary and avant-garde writing and production, in conventional and experimental forms, presenting an overview of four areas of creative activity: the contemporary poem, short prose fiction, film and drama. Participants should want to explore their own creative potential in these forms, and are important part of their work is in the opportunity to make and evaluate these explorations. In addition to production work relating to these four main areas, activities may include poetry and play readings, visits by practising writers, examination of works from rough draft to finished product, visits to theatres, both front and backstage, and rehearsals; types and readings and interviews with overseas writers, workshop and discussion sessions on writings produced by the group.

AT140 Australian Politics
Four hours per week (three hours evening)
Prerequisite, nil
Assessment 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. 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 the political parties and their ideologies, their basis of support in the electorate and in society at large, and their bearing on Australian democracy.
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

AT148 Australia and South-East Asia

(This subject cannot be taken by students who have passed AT147, Modern South-East Asia)

Four hours per week (three hours evening)
Prerequisite, nil
Assessment by papers and tutorial participation

Australia’s involvement with her neighbours in south-east Asia since 1945 is examined against the background of the crises within and the disputes between, the countries of the region. Topics considered include studies of communist parties, communalism, 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.

AT149 Contemporary South-East Asian History

(This subject cannot be taken by students who have passed AT147, Modern South-East Asia)

Four hours per week (three hours evening)
Prerequisite, nil
Assessment by papers and tutorial participation

In this historical introduction to south-east Asia emphasis is on a study of social and political change in Indonesia, Malaysia and Indochina. The contribution of European colonialism to the growth of the national movements and the search for stability and unity in the years following independence is accentuated.

Textbooks

AT150 Psychology 1A

Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisite, nil
Assessment is based on essays, practical exercises and class tests.

AT150 and AT151 are designed to provide students with an introduction to the content and method of psychology. Topics covered in this subject include the origins of modern psychology, the biological bases of behaviour, perception, learning and memory, experimental design and analysis.

Preliminary reading
Students wishing to familiarise themselves with concepts in psychology could read
Kristol, L. *Understanding Psychology*, Melb., Nelson, 1979

Textbooks
Le François, G. *Psychology*, Belmont, Calif., Wadsworth Publ, 1980
Miller, S. *Experimental Design and Statistics*, Lond., Methuen, 1975

AT151 Psychology 1B

Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisite, AT150

Topics covered in this subject include the development of behaviour, the psychology of personality, problems in living, human abilities, and social application of psychology. The design and analysis of experimental studies again forms a major part of the teaching program.

Textbooks
As for AT150
AT170 Sociology 1A
(Individuals and social groups)
Four hours per week (three hours evening)
Prerequisite: Nil, but note that AT170 and AT171 are normally taken in the one 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 society, and what 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 mass media.

Elementary methods of data analysis are taught but no statistical knowledge is assumed. Teaching is mainly by lectures and tutorials, and a range of films and videotapes are used.

Preliminary reading

AT171 Sociology 1B
(Issues in contemporary Australia)
Four hours per week (three hours evening)
Prerequisite: AT170 taken in the same year
Assessment will be determined at the commencement of the course in consultation with students

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 several contemporary social theories. The subject centres around a selection of topics taken from the following: poverty, unemployment, social 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. There is an optional program of films and videotapes.

Reference

Stage two

AT202 Moral and Political Philosophy
(Previously AT203 Social and Political Philosophy)
Four hours per week (three hours evening)
Prerequisite: of AT102, AT106, AT 107 or approved equivalent
Assessment is continuous

An examination of some of the traditional theories of the state of political organisation. An analysis and evaluation of assumptions underlying moral and naturalistic theories of the state and the application of these theories to current social and political problems; an examination of notions of freedom, justice, equality, power, unity and the legitimate use of authority; an analysis of concepts of consent, obligation, the common good and social contract.

Some of the more important writers to be considered are: Plato, Aristotle, Locke, Mill, Aquinas, Hobbes, 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

AT204 Mind, Language and Thought
(Previously AT201, Mind Language and Human Nature)
Four hours per week (three hours evening)
Prerequisite: one of AT102, AT106, AT107 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 causal principle;
(c) phenomenalism;
(d) language, thought and knowledge; meaning and truth;
(e) historical development of attempts to formalise logical systems.

Preliminary reading

Textbooks
Please consult with lecturer before buying textbooks.

References

AT205 Technology and Society
Four hours per week (three hours evening)
Prerequisite: one of AT102, AT106, AT107 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
or

Textbook
Klemm, F. A History of Western Technology. Lond., Allen and Unwin, 1970

References
Forbes, R. The Maker. Lond., Abelard, 1964
Lilley, S. Men, Machines and History 2nd edn. Lond., Lawrence and Wishart, 1965
AT208  Nature and Human Nature
              (Previously AT207 Man’s Place in Nature)
               Four hours per week (three hours evening)
      Prerequisite, one of AT102, AT106, AT107 or approved equivalent
            Assessment is continuous

An examination of the aims, concepts and methods of the emerging ‘science of man’ of the nineteenth and early twentieth centuries; social and intellectual factors in the origins of psychology; ‘man’s place in nature’; the concept of race in nineteenth century thought, Sigmund Freud, his life and writings. Important issues in philosophy raised by the social sciences, e.g., causation, determinism, free will and moral responsibility, are dealt with within the historical context in which they arose.

Textbooks
Fancher, R., Pioneers of Psychology, N.Y., Norton, 1979
Freud, S. Two Short Accounts of Psychana lysis. Harmondsworth Penguin, 1972

References
Coul d, S.J. The Measure of Man N.Y., Norton, 1981
Stocking, G., Race, Culture, and Evolution. N.Y., Free Press, 1968

AT210  Italian 2
               Eight hours per week (six hours evening)
      Prerequisite, AT110 or approved equivalent
            Assessment is continuous

Emphasis is on the development of practical skill in the use of the language, and language laboratory facilities are provided. Literary studies are undertaken, aimed at broadening practical knowledge of the language, and inculcating an interest and understanding of social, political and cultural aspects of modern Italy. A study of Italian linguistic history is undertaken also.

Textbooks
Mizutani, O. and N. An Introduction to Modern Japanese Tokyo Japan Times, 1977

AT212  Japanese 2
               Eight hours per week (six hours evening)
      Prerequisite, AT112 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 listening materials and films is used throughout the course.

It is highly recommended that students enrolled in this subject also enrol for AT215 which is offered in first semester.

Textbooks
Mizutani, O. and N. An Introduction to Modern Japanese Tokyo Japan Times, 1977

AT215  Communication in Japanese B
               Four hours per week (one evening)
      Prerequisite, AT112
            Assessment is continuous

This subject introduces further 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
Okada, H. An Introduction to Kajiki A Selection. Osaka, Japan, Sanyusha, 1975
Miura, A. English Loanwords in Japanese. Rutland, Va., Tuttle, 1979

AT220  Elizabethan and Jacobean Literature
               Four hours per week (three hours evening)
      Prerequisite, AT120 or AT122 or approved equivalent
            Assessment is by assignments and examination

A number of 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

AT222  Seventeenth and Eighteenth Century Literature
               Four hours per week (three hours evening)
      Prerequisite, AT120 or AT122 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

AT230  Print Media
               Four hours per week (three hours evening)
      Prerequisite, any stage one media studies subject
            Assessment is continuous

This subject deals with print media and writing for publication. It examines the nature and functions of the Australian press and studies the practices of print media journalism, both critically and practically. Theories and issues relevant to the newspaper industry are considered, notions of a free press and monopoly, accountability and social responsibility, legal constraints, the press and the political process, questions of bias, balance and objectivity, and the introduction of new technology. There is an examination of some of the techniques of journalistic writing, both to give students an opportunity to develop their writing skills and to give them an insight into the demands of the publishing process. Opportunity is also provided for students to indulge in creative writing, for instance writing an original short story. Writing workshops; group sessions which offer constructive criticism of individual student pieces, are offered for fiction and journalistic articles. Students are encouraged to submit their final written assignment for publication.

Recommended reading
journalism 2. Deakin University, School of Humanities, Open Campus Program.
AT231  Australian Mass Media  
(Subject replaces AT232 Mass Media)  
Four hours per week (three hours evening)  
Prerequisite, any stage one media studies subject  
Assessment is continuous  

This subject is designed to demystify the nature and processes of mass communication in its major forms and its interrelationship with society. There is a continuing examination of the political, social and ethical issues surrounding mass media, especially electronic media, television and radio. The vexed questions surrounding ownership and control, accountability, power and influence of mass media is discussed, primarily in an Australian context. The role of media in political process and the policies of Australian broadcasting, with reference to commercial radio and television, the ABC, multi-cultural and community broadcasting, are analysed. The revival of the Australian film industry during the 1970's, the quality and variety of contemporary production and issues in indigenous film making, are canvassed.

Recommended reading  
Barr, T. Reflections of Reality, Media in Australia, Melbourne, Rigby, 1980  
Fiske, J. and Hartley, J. Reading Television, London, Methuen, 1975  
McQueen, H. Australia's Media Monopolies, Melbourne, Widescope, 1977  

AT240  Advanced Australian Politics  
Four hours per week (three hours evening)  
Prerequisite, AT140 or Year 12 Politics or Australian History, or an approved equivalent  
Assessment is by workshop and essays  

This subject is concerned with empirical, historical analysis of the relations between social structure and politics in Australia. It begins by considering the dimensions of class inequalities and conflicts arising from them, examining social and cultural sources of stability, and concludes with an examination of the social bases and ideologies of the political parties, and their impact on class inequalities in Australia.

Reference  
Parkin, T. Class inequality, and Political Order, London, Paladin, 1972

AT241  Political Sociology  
Four hours per week (three hours evening)  
Prerequisite, any stage one political studies subject, or an approved equivalent  
Assessment is continuous  

In this subject, key aspects of the relation between politics and society are examined. It is introduced 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 Marxism, elitist and pluralist theories; the definition of democracy and the debate about its various models.

Preliminary reading  
Dower, R.E. and Hughes, J.A Political Sociology, London, John Wiley and Sons, 1972, ch 1

AT244  Europe, Capitalism and The Third World  
(Subject cannot be taken by students who have passed AT146, Foundations of the Third World.)  
Four hours per week (three hours evening)  
Prerequisite, any stage one political studies subject or an approved equivalent  
Assessment is by essays and tutorial participation  

This subject relates the shaping of today's Third World to the emergence of capitalism in Western Europe.

It examines the forces that have produced the uneven development where some parts of the world are industrialised and rich and other parts still technically primitive and poor.

The broad themes of the subject are the social origins of capitalism and the process of proletarianism, the Industrial Revolution, European colonisation and the making of a world economy.

Preliminary reading  
Hobsbawm E J. Industry and Empire, Penguin, 1969

AT245  Socialism and Development in China  
(Subject is not being offered in 1983)  
Four hours per week (three hours 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  

AT247  Modern Japan  
Four hours per week (three hours evening)  
Prerequisite, any stage one political studies subject, or an approved equivalent  
Assessment 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 sheds light on the characteristic features which distinguish contemporary Japan from other industrialised societies, especially in politics, education, business operation and employer-employee relations.

Reference  

AT248  History of Modern China  
(Previously AT246, The Chinese Revolution)  
Four hours per week (three hours evening)  
Prerequisite, any stage one political studies subject, or an approved equivalent  
Assessment 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 divergence of China are taken into account. Special emphasis is on cultural, social and institutional change in twentieth century China with some examination of contemporary Chinese society.
Textbooks
Chesnoums, J. Peasant Revolts in China Lond., Thames and Hudson, 1973

AT250 Psychology 2B
Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisites, AT150 and AT151
Assessment is based on an essay, practical exercises and class tests.
It is highly recommended that SM278 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 developmental psychology, which emphasises the earlier periods of life at times when the behaviour of infants and children is undergoing rapid development and maturation. Emphasis is on social, emotional, cognitive and intellectual development with a comprehensive experiential and experimental program supporting the theoretical material. Students are encouraged and expected to interact with children of various ages.
The teaching program consists of two lectures, a practical session and a tutorial class.

Preliminary reading
Sanis, J. and Butcher, E. J. eds. The Sociological Tradition. Lond., Heinemann, 1970
Tucker, N. What is a Child? Glasgow, Fontana, 1977

Note
For details of the subjects SM279 Design and Measurement 2A and SM279 Design and Measurement 2B, please refer to the section entitled 'Subjects offered by the other faculties'.

AT251 Psychology 2A
Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisites, AT150 and AT151
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.

Preliminary reading

AT270 Sociology 2A
(Social change)
Four hours per week (three hours evening)
Prerequisites, AT170 and AT171
Assessment consists of one essay, a final prepared examination and tutorial contributions.
This subject deals with the most basic issues in social explanation: What holds society together? What are the sources of power? What is the importance of the economy, religion, bureaucracy and government? What causes social change? The ideas of several of the major social theorists are studied (e.g. Marx, Weber, Durkheim, Parsons, Freud) with a view to providing the student with an understanding of the central themes in sociology and a grounding in the theoretical concepts which are especially useful to those wishing to pursue sociology at an advanced level.

References
Nisbet, R. The Sociological Tradition. Lond., Heinemann, 1970

AT271 Sociology 2B
(Methodology of social research)
Four hours per week (three hours evening)
Prerequisites, AT170 and AT171
Assessment is continuous and decided upon at the start of the course.
Students intending to major in sociology are encouraged to enrol for this subject which will be offered in second semester.
In this subject, the emphasis is not so much on particular methods of gathering data as on the Interplay between theoretical orientations and methodology, i.e. the theory-research relationship. The aims of sociology and the development of different theoretical orientations are important to any consideration of research and methodology. Examples from sociological research are used to illustrate the theory-research relationship and to point out the strengths and weaknesses of various approaches. Also considered are the methodological questions relevant to research in other subjects taught within the Department of Social and Political Studies, along with the ethical and political issues that confront social scientists.
Within this framework the subject consists of combinations of lectures, tutorials, practical workshops and collective and/or individual workshops. The level and form of assessment depends on student preference, teaching resources and organisation of the subject. Assessment usually consists of practical exercises, class workshop participation and a practical research project.
The subject has two emphases in teaching approaches:
(a) sociological research raises fundamental problems of the social context of research (aims, ethics, politics, organisation) and the relation between research design, explanation and policy implications.
(b) practical skills must be set in that context and acquired through use in workshop and research projects. Areas covered include techniques such as sample surveys, scaling, interviewing, content analysis, critical investigations, and quantitative and qualitative data analysis.

References
Shipman, M.D. Limitations of Social Research. Lond., Longman, 1972

AT272 Sociology 2C
(Sociology of deviance and social control)
Four hours per week (three hours evening)
Prerequisites, AT70 and AT171
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 underemphasised 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 the powerful groups over the less powerful in society.
The subject is focused on different theoretical perspectives on deviance and the consequent variations in the sort 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.
Preliminary reading

References
Wilson, P. and Grundy, W. Two Faces of Deviance. St Lucia, Queensland University Press, 1978

AT273 Sociology 2D
(4 hours per week (three hours evening)
For description of this subject see AT241 Political Sociology.

Stage three
AT301 Aesthetics, Education and Reason — diploma/degree
Three hours per week (combined day and evening)
Prerequisites, two of the following subjects including either AT202 or AT204, AT202, AT204, AT205, AT208, or an approved equivalent
Assessment is continuous

AT304 Science and Change — diploma/degree
Three hours per week
Prerequisites, two of the following subjects including either AT205 or AT208, AT202, AT204, AT205, AT208 or an approved equivalent
Assessment is continuous

AT305 Science and Change — degree
Two hours per week
Prerequisites, two of the following subjects including either AT205 or AT208, AT202, AT204, AT205, AT208 or an approved equivalent
Assessment is continuous

AT306 Philosophy of Science — diploma/degree
Three hours per week
Prerequisites, two of the following subjects including either AT202 or AT204, AT202, AT204, AT205, AT208 or an approved equivalent
Assessment is continuous

A series of seminars on some of the following topics: rationality and the nature of reason; reasoning and values; relativism; assessments of and decisions about theories.

Textbooks
Please consult with lecturer before buying textbooks.

References
Trigg, R. Reason and Commitment. Lond., Cambridge University Press, 1973
AT307 Philosophy of Science — degree
Two hours per week
Prerequisites, two of AT202, AT204, AT205, AT208 or an approved equivalent
Assessment is continuous

A series of seminars devoted to a study of the approach to philosophy of science known as instrumentalism. Some of the topics discussed are: the notion of a 'family concept' in philosophy; the pragmatist; Dewey's role in the development of instrumentalism; criticisms of the instrumentalist mode of thought; the realist view.

Preliminary reading
Frank, P. ed. The Variatjon of Scientific Theories. N.Y., Collier Books, 1961
Textbook
Kenneiisscher, H. Knowledge and Science. Melb., Macmillan, 1977

References
Harre, R. The Philosophies of Science. Lond., Oxford University Press, 1972
Smart, J. Between Science and Philosophy. N.Y., Random House, 1968

AT310 Italian 3 — diploma degree
Six hours per week
Prerequisite, AT210 or approved equivalent
Assessment is continuous

Students are expected to concentrate on developing a knowledge of the language and expanding their knowledge of Italian culture

AT311 Italian 3 — degree
Two hours per week
Prerequisite, AT210
Assessment is continuous

Students undertake an intensive study of twentieth century Italy. This includes studies on aspects of Italian migration, and a study of Italian dialects with particular emphasis on dialects spoken by Italians in Australia.

AT312 Japanese 3 — diploma degree
Six hours per week daytime or evening
Prerequisite, AT212 or approved equivalent Assessment is continuous

This subject continues systematically to extend the students' use of spoken and written Japanese. It consists of 4 major components: grammar, aural comprehension, reading and conversation. 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.

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
Integrated Spoken Japanese I. Vols. 1 and 2. Tokyo, Inter-University Centre for Japanese Language Studies, 1971
Saito, S. Nihonjin no Isho. Tokyo, Japan, Nihongo Kyokai Gakkai, 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
Takeyama, M. Birumi no Tategoto. Tokyo, Popurasha, 1970

AT313 Japanese 3 — degree
Two hours per week
Prerequisite, AT212
Assessment is continuous

This subject consists of a two-hour class which deals with a number of issues on contemporary Japan, in Japanese. Students read a variety of unbridged newspaper articles which are complemented by additional language exercises.

Textbooks
Dictionaries, as for AT312

AT320 Literature of the United States — diploma degree
Four hours per week
Prerequisites, AT220 and AT222 or approved equivalent
Assessment is continuous

An intensive study of representative works of the nineteenth and twentieth century, their relation to social movements and the current of ideas, and to modern European literature. Authors selected include Stevens, Eliot, Pound and Lowell, the mainstream of novelists from Hawthorne to Bellow; and dramatists of the twentieth century.

Preliminary reading

AT321 Literature of the United States — degree
Three hours per week
Prerequisites, AT220 and AT222
Assessment is continuous

Preliminary reading
As for AT320

AT322 Australian Literature — diploma degree
Four hours per week
Prerequisites, AT220 and AT222 or approved equivalent
Assessment is continuous

Students are encouraged to read widely in nineteenth and twentieth century Australian literature; to associate the creative works with the general cultural environment; observing both those elements which may be claimed to be distinctively Australian and those deriving from English and European sources. Poetry studied ranges from the ballads to contemporary verse; narrative fiction is studied from Lawson to the present; the drama is chosen mostly from the period after 1950.
Preliminary reading

AT323 Australian Literature — degree
Three hours per week
Prerequisites, AT220 and AT222
Assessment is continuous

Preliminary reading
As for AT322

AT334 Television Aesthetics and Radio Production — diplomadegree
(This subject replaces AT330 Writing for Radio and Television — diplomadegree)
Five hours per week
Prerequisites, AT131 or AT133 and AT134 and AT230 and AT231. AT334 should either precede, or preferably, be taken concurrently with AT335.
Assessment is continuous

This subject involves a detailed critical analysis of individual works written for radio and television, and an examination of the structure of the medium. Part of the course is concerned with television as a cultural form. The way that television has attempted to represent the past is examined with reference to history and the documentary form, history as fiction or narrative, television ideology and myth, and alternative histories and documentaries. Screenings and readings may be selected from: The Last Tasmanian, The Fabulous Century, The Scottish, Against the Wind, Days of Hope, Colonel, The War Came.

Another segment of the television course looks at television ’genres’ in the context of how these terms are structured and organised to produce meaning. Topics and screenings may include study of television and naturalism — Talking to a Stranger, or Pennies from Heaven — actuality television, soaps and situation comedies, police dramas — The Sweeney, Stalky and Hutch — and the genre of television humour. The second major section of the course involves the consideration of radio drama or play with the object of developing an overall aesthetic of the medium.

Elements of sound play are examined: traditional narration, vocal elements, role of the narrator, FX, experimental formats, mask and concrete, and alternative recording technology. Students are given instruction in sound procedures and the opportunity to participate in the production of a radio work from a script. Practical instruction is given in the use and capabilities of audio production equipment: methods of sound generation and processing, dub and physical editing, multi-tracking and montage construction, tape manipulation effects. Completed sound works may be broadcast on the ABC or a community radio station.

Recommended reading
Belove, K. Critical Practice. Lond., Methuen, 1980
Hawton, T. Structuralism and Semiotics. Lond., Methuen, 1977

AT335 Television Aesthetics and Radio Production — degree
(This subject replaces AT331 Writing for Radio and Television — degree)
Two hours per week
Prerequisites, as for AT334
AT335 should either be preceded by, or taken concurrently with, AT334.
Assessment is continuous

Subject details are the same as for AT334. Students select specific topics for study in depth.

Recommended reading
As for AT334

AT336 Media Public Policy — diplomadegree
(This subject replaces AT332 Communications and Human Behaviour — diplomadegree)
Five hours per week
Prerequisites, as for AT334
AT336 should either precede, or preferably, be taken concurrently with AT337.
Assessment is continuous

This subject is an extension of the Australian mass media subject, dealing with some of the most vexed, complicated and important issues concerning the place and function of mass developments in Australian society. A central theme is the examination of media in the context of a micro-chip society, a new or ‘unannounced’ industrial revolution. There is an analysis of the plethora of government inquiries into the media and students are required to specialise in areas of contemporary media public policy: ownership and control of newspapers, with reference to the findings of the Victorian Government Norris Inquiry; the inquiry to introduce cable television conducted by the Australian Broadcasting Tribunal; Australia’s domestic satellite interim management by Overseas Telecommunication Corporation; the Telecom Inquiry; the Children’s Television Foundation; the Australian Film Commission; the Dix Inquiry into the Australian Broadcasting Commission; the revised Broadcasting and Television Act, the Freedom of Information Act. Students are required to examine public policy from a breadth of perspectives and consult widely with activists and practitioners in these areas.

Considerable emphasis is on the methodology of investigation: interpretation of documents, sampling and measurement techniques, constructing original data, interpretation and presentation of data. The subject is taught in a comparative framework with considerable emphasis on the United States and Canadian experience. The major media public policy questions are not unique to Australia — tendency towards broadcasting deregulation by the FCC (USA) and CRTV (Canada); the crisis in public broadcasting, open skies for satellites, access to information and intrusion of privacy, as well as the hardware explosion of video cassette recorders and video discs. Students are encouraged to present their findings in a manner which enables their work to be available to the community, as published papers, submission to inquiries, or as a public affairs radio program.

Recommended reading

AT337 Media Public Policy — degree
(This subject replaces AT333 Communications and Human Behaviour — degree)
Two hours per week
Prerequisites, as for AT334
AT337 should either be preceded by, or taken concurrently with, AT338.
Assessment is continuous

Subject details are the same as for AT336. Students select specific topics for study in depth.

Recommended reading
As for AT336

AT340 Public Policy in Australia — diplomadegree
Five hours per week day and evening
Prerequisites, AT140 or equivalent, two stage two political studies subjects. AT240 is recommended.
Assessment is continuous

In this subject, the policy-making and decision-making processes of the Australian Federal Government are examined. While these processes are primarily at the apex of government the focal point includes actors at other levels, such as state and local governments, community groups, interest groups and political parties. The broader factors of politics which shape and determine the policy processes in Australia are also considered. The approach taken is through
lectures and cultural, science and technology case studies. While some attempt is made to cover a range of topics, the emphasis is on policy areas. Examples of case studies include:

- Arts funding and the Industry Assistance Commission report
- The inquiry into telecommunications services in Australia and the revolution in communication technology
- The microelectronics revolution
- Biotechnology and genetic engineering

**Preliminary reading**

Report of the Committee of Inquiry into Technological Change in Australia, Vols. 1, 2, 3 and 4, Can. A.C.T., ACPS, 1980

**AT341 Public Policy in Australia — degree**

Two hours per week day and evening

Prerequisite, as for AT340

Assessment is continuous

Students will be expected to deal with particular issues in depth and to participate in a series of seminars.

**AT342 Comparative Politics: The Soviet Union — diploma degree**

Five hours per week day and evening

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 central aim is to provide a framework for the comparative analysis of communist political systems but not to the exclusion of providing some points of comparison and contrasts with political systems of the Australian type.

The approach is within a general context of economic, political and cultural development, with a thematic link that explores the varying problems and issues encountered in the construction of socialism. The issues involved in the discussion over what is a socialist society provide the bridging theme in the comparative analysis of the Soviet Union and China.

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 class conflict; bureaucracy and elites.

Case studies provide depth in selected areas: the family, entertainment and leisure; crime and deviance; education; health and social welfare; city and rural life; minorities and ethnic groups; dissent and repression.

**Recommended reading**


**AT343 Comparative Politics: The Soviet Union — degree**

Two hours per week day and evening

Prerequisite, as for AT342

Assessment is continuous

Students will be expected to deal with particular issues in depth and to participate in a series of seminars.

**AT344 Comparative Politics: China — diploma degree**

Five hours per week day and evening

Prerequisites, two stage two political studies subjects

Assessment is continuous

The subject introduces students to the comparative analysis of political systems through a study of Soviet government and society. The intention is to provide a framework for the comparative analysis of communist political systems but not to the exclusion of providing some points of comparison and contrasts with political systems of the Australian type.

The approach is within a general context of economic, political and cultural development, with a thematic link that explores the varying problems and issues encountered in the construction of socialism. The issues involved in the discussion over what is a socialist society provide the bridging theme in the comparative analysis of China and the Soviet Union.

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 class conflict; bureaucracy and elites.

Case studies provide depth in selected areas: the family, entertainment and leisure; crime and deviance; education; health and social welfare; city and rural life; minorities and ethnic groups; dissent and repression.

**Textbooks**

Lee, Hong Yung, The Politics of the Chinese Cultural Revolution, Berkeley, University of California, 1978


**AT345 Comparative Politics: China — degree**

Two hours per week day and evening

Prerequisite, as for AT344

Assessment is continuous

Students will be expected to deal with particular issues in depth and to participate in a series of seminars.

**AT346 Colonialism. Class and Underdevelopment in India — diploma degree**

Five hours per week

Prerequisites, two stage two political studies subjects

Assessment is by seminar participation and papers

This subject takes up at an advanced level some of the central problems raised in the first year subjects AT144 and AT146 and sets them in the context of various theories that attempt to explain them.

The focal point of the subject is the historical accounting for the emergence of capitalist class relations in India particularly with respect to agriculture. The discussion examines a famous debate in India as to whether agriculture is becoming capitalist and the consequences of that development. Other topics include the changing role of imperial control in colonial and post-colonial periods, together with its consequences for class formation; persisting poverty and neo-progressive change in land reform; agricultural modernisation and industrialisation.

**Reference**

AT347 Relations between Japan and Asia — degree
Two 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 AT144 and AT146 and in comparison to those discussed in AT346. 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 on the implications and consequences of Japan's policies in east Asia.

AT350 Psychology 3A — diploma/degree
(Organisational psychology)
Four hours per week
Prerequisites, AT250 and AT251
Assessment is based on project work and class tests
Working on the premise of an 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, inter-personal 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.

References

AT351 Psychology 3A/B — degree
(Methods and Measures)
Three hours per week
Prerequisites, AT250 and AT251
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
Tyler, L.E. and Walsh, W.B., Tests and Measurements, 3rd edn, N.Y., Prentice-Hall, 1979

AT352 Psychology 3B — diploma/degree
(Psychology of personality)
Four hours per week
Prerequisites, AT250 and AT251
Students are strongly advised to complete MA278 prior to, or concurrently with, this subject
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. While attention is given to other specialised fields of psychology (e.g. development, perception, learning, 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
(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 early lectures.

Preliminary reading

AT353 Psychology 3C — diploma/degree
(Psychology of adjustment)
Four hours per week
Prerequisites, AT250 and AT251
Assessment is based on an essay, a practical exercise and class tests
This subject examines the concept of 'adjustment', 'stress' and 'coping' behaviour and related theoretical, social and ethical issues. Some critical periods of human life are selected for study: periods which require major changes in coping behaviour. Included are changes and adjustments in childhood, adolescence and maturity. 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) coping in childhood, adolescence and maturity — specific 'coping' problems and developmental crises;
(d) conflict, frustration, aggression and anxiety.

Preliminary reading
Lazarus, R.S. (ed), Stress and Adjustment, N.Y., McGraw-Hill, 1976

AT354 Psychology 3C(D) — degree
(Counselling and interviewing)
Three hours per week
Prerequisites, AT250 and AT251
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 focus their interests on topics relevant to counselling and interviewing.

Preliminary reading

AT355 Psychology 3D — diploma/degree
(Applied social psychology)
Four hours per week
Prerequisites, AT250 and AT251
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 investigatory techniques used by social scientists. Following this experimental stage students are encouraged to consider theoretical issues relating to the methods used, including ethical considerations.
In Etiotic polttcal organs&~onal Moser, 2nd edn., Lond., Heinemann Educational Books, 1973

AT370 Sociology 3A — diploma(degree
(Urban sociology)
Five hours per week day and evening
Prerequisites, two stage two sociology subjects
Assessment is continuous
This subject deals with the growth of urban industrial societies over the last century with particular attention devoted to Australian urbanisation and urbanism. The study shows how an understanding of urbanism and urban problems is ultimately dependent upon an adequate analysis of the role of cities in the broader development of the nation. Several theories of urban development are introduced in the context of contemporary urban issues such as the housing and energy crises, urban and regional planning, suburban sprawl, inner city redevelopment, social segregation and the emergence of urban action groups. The role of actors in the private sector in urban development is examined together with their relationship to the various agencies of the State as well as the State’s own important role in urban development.

References

AT371 Sociology 3A — degree
Two hours per week, first semester
A series of advanced seminars dealing with issues in the methodology of social science.

AT372 Sociology 3B — diploma(degree
(Sociology of organisations)
Five hours per week day and evening
Prerequisites, two stage two sociology subjects
Assessment is continuous
This subject combines elements of the studies commonly referred to as ‘organisational theory’, ‘industrial sociology’ and ‘sociology of work’. It includes the study of the various ways that organisations have been identified and analysed and a consideration of the social contexts in which they operate. Organisational structures are controversial because they engage the interests of different social groups for a variety of reasons which are perceived by their proponents as rational or moral. Particular organisational forms are not merely more or less efficient for the achievement of goals, they have a political and therefore problematical content and it is important that both of these main themes are emphasised.

The major sections of the course are:
(a) major schools of organisation theory;
(b) bureaucracy and industrial society;
(c) the contemporary pressures for organisational change including study of West Germany and Yugoslavia.

Textbooks
Fox, A. Man Mismanagement Lond., Hutchinson, 1974
Rose, M. Industrial Behaviour, Hammondsworth, Penguin, 1975

AT373 Sociology 3B — degree
Two hours per week, second semester
A series of advanced seminars dealing with current issues in sociology.

AT374 Sociology 3C — diploma(degree
(Minorities)
Five hours per week day and evening
Prerequisites, two stage two sociology subjects
Assessment is 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 is looked at in general theoretical terms and comparisons drawn with minority situations elsewhere, such as Britain, U.S.A., 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.

Preliminary reading

References
Bowker, G. and Carrier, J., eds. Rare and Ethnic Relations. Holmes and Meier, 1976

AT375 Sociology 3C — degree
Two hours per week, second semester
A series of advanced seminars dealing with current issues in sociology.

Prerequisites, as for AT374
Subjects offered by other faculties

Listed below are subjects taught by departments in other faculties which may be taken by students enrolled in a Bachelor of Arts or Diploma 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

**SM171** Mathematics
- Five hours per week in first semester
- Prerequisite: SM171, SM172 or a tertiary mathematics equivalent
- Assessment is continuous

A first-year subject involving the study of major branches in calculus, and regression. Topics to be studied are chosen from: Projective geometry, Euclidean geometry, co-ordinate geometry; Vector spaces, Hilbert spaces; Topology. Finite geometries.

**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
- Prerequisite: 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 spaces, Hilbert spaces, Topology. Finite geometries.

**SM278** Design and Measurement 2A
- Five hours per week daytime
- Four hours per week evening
- Prerequisites: AT150
- 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 year courses in psychology.

Topics to be studied include: factorial design, 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
- 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

References
Faculty of Arts

SP153 Science in Modern Society
Four hours per week during first semester
No prerequisite
Assessment by examination

(SP153 and SP154 are multi-disciplinary subjects taken as two single semester subjects, either together or separately.)

SP154 Science in Modern Society
Four hours per week during second semester
No prerequisite
Assessment by examination

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
- Light and colour
- Science and medicine
- Science and foods
- Aspects of genetics
- Human physiology
- Important chemicals in modern society
- Computers in society
- Aspects of geology

Intending students are invited to discuss this subject with the relevant Department of Physics staff.

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 student 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 economics 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

In this subject, some of the methods adopted by economists are used to analyse economic problems within the framework of the Australian economic system. The course commences by examining the role of the contemporary market system in allocating resources and distributing income and wealth. This is followed by a detailed analysis of the determinants of the level and rate of change of output, employment, prices and international reserves. Attention is then focused on the role of fiscal, monetary, prices and incomes, and balance of payments policies in achieving, simultaneously, internal and external balance.

References
Shapiro, E. Macroeconomic Analysis. 4th edn, N.Y., Harcourt, Brace Jovanovich, Inc., 1976
**BS211** Managerial Economic Analysis

**Prerequisite, BS111 Economics 1**

Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their course.

This unit shows how economic analysis can be used to assist business decision making. Empirical studies are used as a means of illustration. The unit deals with these topics: demand analysis, including empirical demand studies and problems (forecasting); production and cost analysis (opportunity cost, short-run and long-run production and cost problems); profit, and goals of firms; pricing policies of firms and public utilities and investment analysis.

**References**


Davies, J.R. and Hughes, S. Managerial Economics. Plymouth, U.K., MacDonald and Evans, 1977


**BS213** Industry and Government

**Prerequisite, BS111 Economics 1**

Students who are contemplating major studies in economics should include this unit and/or BS211 Managerial Economic Analysis in their course.

This unit deals with the structure, conduct and performance of industry in contemporary economies with special reference to Australia, and considers the role of government in these economies.

A study of an Australian industry is an integral part of the course. Monopoly and the modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry policy are discussed.

**References**


Galbraith, J.K. Economics and the Public Purpose, Harmondsworth, Penguin, 1975


**BS214** Industrial Relations

**Prerequisite, BS111 Economics 1**

In this unit, the nature of an industrial relations system is considered, with emphasis on the Australian experience. Particular emphasis is directed towards the economic environment and its impact upon the environment of the parties in the system. Topics to be covered include:

(a) relationship between the Industrial relations and economic systems;

(b) parties: the industrial relations and economic roles of trade unions, employer associations and industrial tribunals, and governments;

(c) rule-making processes: with particular emphasis upon dispute settlement and wage fixation.

**References**


**BS311** Public Finance

**Prerequisite, BS111 Economics 1**

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 base, the tax base and tax rates; analysis of present sales tax and excise tax arrangements and alternatives to these forms of consumption taxes. Schemes to reform the Australian tax system.

3. techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

**References**

Australia, Taxation Review Committee. Full Report, Canberra, January, 1975

Australia, Treasury Taxation Papers Nos. 1-15, Canberra, 1974

Brown, C.V. and Jackson, P.M. Public Sector Economics, London, Martin Robinson, 1978


**BS312** Economic Research

**Prerequisites, BS211 Managerial Economic Analysis or BS213 Industry and Government**

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 base, the tax base and tax rates; analysis of present sales tax and excise tax arrangements and alternatives to these forms of consumption taxes. Schemes to reform the Australian tax system.

3. techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

**References**

Australia, Taxation Review Committee. Full Report, Canberra, January, 1975

Australia, Treasury Taxation Papers Nos. 1-15, Canberra, 1974

Brown, C.V. and Jackson, P.M. Public Sector Economics, London, Martin Robinson, 1978


**BS315** Monetary Economics

**Prerequisite, BS111 Economics 1**

This unit provides a study of the nature of and developments in Australian finance markets and currencies, various aspects of monetary theory and policy. The topics to be studied include:

1. the nature and role of finance: economic development and financial development, evaluating the performance of finance markets; short-term money markets; official and international money market, and inter-company loan; capital markets; primary and secondary, fixed and floating interest rates in the finance markets, the question of controls on foreign exchange.

2. monetary theory: classical, Keynesian, neo-Keynesian and modern theories of the relationship between money and output, employment and prices.

3. monetary policy: choice of policy instrument; rules and discretion; strength of monetary policy; monetary policy in Australia; monetary policy in an international economy.

**References**

Davis, K., Lewis, M. Monetary Policy in Australia, Melb., Longman Cheshire, 1980


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.

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 at:
BS103  Accounting 1A
BS109  Accounting 1C
BS108  The Australian Legal System
BS121  Introduction to Data Processing
BS132  Administrative Studies 1

Liberal Studies

The following subjects taught by the Department of Liberal Studies form an integral part of the courses offered by the other faculties: Science, Engineering, Art and Business.

They are specifically included to broaden the scope of students' general education in the areas of communications, report writing, the social sciences, public speaking, supervision and other essential areas.

These subjects are not available to Arts students

Subjects for Applied Science students
AT191  Health and Society
AT192  Health and Society
AT291  Complementary Studies
AT392  Report Writing
AT393  Communication Studies
AT394  Report Writing
AT493  Brain and Behaviour

For Individual subject descriptions see the Faculty of Applied Science handbook.

Subjects for Art students
AT193  Applied Writing
AT294  Social Science 2
AT391  Applied Psychology
AT395  Applied Psychology
AT492  Theory of Communication

For individual subject descriptions see the Faculty of Art handbook.

Subjects for Business students
AT295  Business Communication
AT693  Psychology and Interpersonal Skills

For individual subject descriptions see the Faculty of Business handbook.

Subjects for Engineering students
AT194  Thinking and Communicating
AT195  Communications 1
AT293  Liberal Studies
CS493  General Studies
AT691  Urban Sociology
AT692  Energy Policy Formulation

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:
AT792  Applied Psychology
AT793  Literature and Media
AT794  Sociology
AT795  Law in Society

Details of these and other possible electives are available from the Department of Liberal Studies.
Post graduate courses

Graduate Diploma in Japanese

The Graduate Diploma in Japanese is an intensive language course based on an examination of Japanese culture and society and is designed to enable students to develop their language skills through reading recent Japanese newspaper articles and listening to media broadcasts. Specific training is focused on reading, aural comprehension and speaking.

The course has been planned so that students who have completed a three-year undergraduate program in Japanese can further their knowledge of the Japanese language and reach a stage where they have linguistic competence to deal with a wide variety of topics in the written and spoken language. Development of competence in grammar, particularly the understanding of long and complex sentence structures, and the acquisition of a wider vocabulary range, including a large number of characters, is essential. Students become familiar with a wide variety of journalistic and written styles found in newspapers. Training in translation and précis writing, and in the various styles and speech levels which characterise modern spoken Japanese is also a part of the course.

Language development is focused on four major areas of Japanese studies: social, cultural, business, and political. Students consider:

(a) general problems and trends as they are analysed by Japanese writers within the framework of the society as a whole; and
(b) the validity of assertions and generalisations which are made by Japanese, as well as by foreign writers.

The course may be completed part-time in the evening over two years. The course comprises eight semester subjects and each subject involves three exercises using computer facilities. In all subjects students are required to complete one research project and two tests.

Subjects on Japanese society and culture, and on business and politics are offered in alternate 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:

AT412 Japanese Society A
AT413 Japanese Society B
AT414 Japanese Business A
AT415 Japanese Business B
AT416 Japanese Business A
AT417 Japanese Business B
AT418 Japanese Politics A
AT419 Japanese Politics B

Preliminary reading


References


Graduate Diploma in Applied Social Psychology

The graduate diploma program in applied social psychology has been designed to develop an understanding of 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.

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. A reasonable standard of statistical competence is required also.

Course structure

The course has been designed to be taken by part-time study over two years, or full-time study over one year. 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

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:

First year, semester 1

AT450 Applied Social Psychology
AT451 Research Design and Analysis

First year, semester 2

AT452 Ethical Aspects of Social Research
AT453 Quantitative Methods in Social Research

Second year, semester 1

AT454 Individual and Social Change
AT455 Small Group Processes

Second year, semester 2

AT456 Issues in Social Psychology
AT457 Special Applications Option
**The full-time course**

Full-time students will take four subjects each semester. The study program for full-time students is as follows:

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<tr>
<th>Semester 1</th>
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<tbody>
<tr>
<td>AT450</td>
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<tr>
<td>AT451</td>
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<td>AT453</td>
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<tr>
<td>AT455</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
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<tr>
<td>AT452</td>
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<td>AT454</td>
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<td>AT456</td>
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<tr>
<td>AT457</td>
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</tbody>
</table>

**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.

**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 its social impacts; |
| (b) the formation of national, state and metropolitan urban policies; |
| (c) the organisational processes and use of techniques and skills relevant to urban planning, administration and community organisation. |

**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 be considered also.

**Course structure**

The course entails one year of full-time study or two years' study part-time, involving seven semester subjects and a research report. Each subject usually involves three hours of class meetings per week for one semester.

The following subjects are offered:

| AT480  | Advanced Urban Research          |
| AT481  | Research Report                  |
| AT482  | Urban Policy                     |
| AT483  | Urban Social Theory              |
| AT484  | Current Urban Research           |
| AT485  | Metropolitan Decision-making     |
| AT486  | Comparative Urbanisation         |
| AT487  | Sociology and Planning           |
| AT488  | Introduction to Town Planning    |
| AT489  | Community Organisation           |
| 85465  | Urban and Regional Economics     |

Each student is expected to complete a major research report relating to either policy issues or some aspects of urban administration and planning or community development. Where possible, research is developed in co-operation with government departments, consultancy firms, community groups and research institutes.
Postgraduate subject details

Japanese

AT412 Japanese Society A
This subject provides an introduction to problems which exist in Japanese society. The topics cover family problems, old age and social security, social probelns relating to crime, suicide, gangster organisations, youth violence, dietary life and common diseases, female inequality, and problems of nationality. The program is based mainly on newspaper items but some radio broadcasts are included and specialist lecturers lead seminars on certain topics.

AT413 Japanese Society B
Students extend their reading of topics introduced in Japanese Society A and also develop their conversational skills in this subject.

AT414 Japanese Culture A
This subject allows students to extend their reading of topics introduced in Japanese Society A and also to develop their conversational skills.

AT415 Japanese Culture B
In this subject topics covering various aspects of modern Japanese culture are studied. For example, the role of traditional and modern arts in contemporary Japan, sport, religion, media, language, Japanese abroad, education, problems faced by Koreans living in Japan and Japanese repatriates from China.

AT416 Japanese Business A
This subject is divided into two components. In one, additional business topics are covered. In the other, 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.

AT417 Japanese Business B
This subject allows students to extend their reading of topics introduced in Japanese Business A and also develop their conversational skills.

AT418 Japanese Politics A
In this subject students are introduced to various aspects of the Japanese political system through reading of newspaper articles supplemented by some radio broadcasts. Topics such as recent trends in political parties, local and national policy-making are covered. Guest lecturers will lead seminars on certain topics.

AT419 Japanese Politics B
This subject is divided into two component, allowing students to pursue further reading which extends the topics introduced in Japanese Politics A and also to develop their conversational skills.

Applied social psychology

AT450 Applied Social Psychology
Preliminary reading
Taeil, H. and Fraser, C. Introducing Social Psychology
Harmondsworth, Penguin, 1978

AT451 Research Design and Analysis
AT452 Ethical Aspects of Social Research
AT453 Quantitative Methods in Social Research
AT454 Individual and Social Change Processes

Textbooks

Ravetz, J.R. Scientific Knowledge and its Social Problems
Harmondsworth, Penguin, 1973

Prepared by F.C. Liddell. A., with the assistance of the Subject Co-ordinators

Preliminary reading
Taeil, H. and Fraser, C. Introducing Social Psychology
Harmondsworth, Penguin, 1978

AT451 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 — an essay 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

AT452 Ethical Aspects of Social Research
In this subject, the philosophical, theoretical, ethical and political issues involved in contemporary social research practices are examined. Starting with a consideration of the current ethics, attitudes and value orientations implicit in social psychology, a number of areas of concern to the practising social researcher are explored. Included here will be questions associated with choice of theoretical perspectives, methodology and subjects, the use made of research results and methods of evaluating proposed research (such as cost-benefit analyses), rights and objections of all parties, and working as a member of an interdisciplinary team. Finally, there is a review of the standards of conduct expected of a professional psychologist and of other professional considerations.

Preliminary reading
Ravetz, J.R. Scientific Knowledge and its Social Problems
Harmondsworth, Penguin, 1973

AT453 Quantitative Methods in Social Research
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

Textbooks

AT454 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-scientific 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**


Windschuttle, K. Unemployment, Hammondsworth, Penguin, 1980

**AT455 Small Group Processes**
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 process skills: examining relevant theoretical concepts of small-group processes and developing skills for working in groups;

(iii) communicating in groups: instructions and practice in presenting information and ideas to groups and in using instructional technology, such as video.

**Preliminary reading**


**AT456 Issues in Social Psychology**

There are two components in this subject. The first is made up of two work placements which are required to complete. In order to be given a pass in the subject students must complete these 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**

Watson, P. War on the Mind Harmondsworth, Penguin, 1980

**AT457 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.

**Urban Sociology subject details**

**AT482 Urban Policy**

This subject is concerned with the analysis and formation of urban policies at the national, metropolitan and local level. Particular attention is given to the policies of housing, population, employment, and land use planning. Experts in various policy areas participate in this course.

**AT483 Urban Social Theory**

This subject is designed to:

(a) introduce students to the major theoretical perspectives used by social scientists to analyse urban development;

(b) examine the nature of the urbanisation process and related urban problems, and,

(c) develop an understanding of the role of the State in urban society.

**AT484 Current Urban Research**

This subject has two objectives: firstly, to introduce students to the range, style and various methodologies employed in contemporary urban research; secondly, to familiarise students with the available data sources for Australian urban research and with basic research techniques for measuring what is urban, for describing urban residential patterns, and for calculating changes in the urban population.

**AT485 Metropolitan Decision-making**

In this subject the decision-making process and the characteristics and functions of the major private and public decision-makers operating in the urban environment are explored. The public sector is examined at all levels of government while in the private sector particular attention is given to the role of property developers and the economic and political context in which developers operate.

**AT486 Comparative Urbanisation**

This subject is concerned with urbanisation in other societies and the attendant urban problems and with the policies and plans designed to address such problems. Attention is given to the shared elements between urban societies and possible policy and planning lessons for Australia. While particular attention is given to Asia, Western and Eastern Europe are also looked at in some detail.

**AT487 Sociology and Planning**

In this subject the role of the sociologist in the planning process is examined. The subject draws on the sociological theory outlined in AT483, as well as the research techniques developed in AT484. Topics to which these conceptual and practical skills are applied include: social mix, suburban estate design, the inner city, social segregation and residential mobility.

**AT488 introduction to Town Planning**

This subject is designed to introduce the principles and techniques of land use planning. Given the tendency toward inter-disciplinary planning terms, an ability to understand the principles and practices of land use planning can be a highly useful skill for social scientists. Particular attention is given to both the history of town planning in Australia and the examination of contemporary planning principles such as density codes, development controls, planning appeals and building codes.

**AT489 Community Organisation**

This subject is concerned with analysing and involving students in community development programs and public participation at the local level. Students have the option of participating in various community programs and activities. Class discussion focuses on concepts of community, citizen participation and social action research.

**BS465 Urban and Regional Economics**

This subject is designed to introduce students to the principles of economic analysis as they apply to the city. Attention is given not only to the techniques and principles of conventional economics (neo-classical economics) but also to those of political economy. Topics in which these principles and techniques are applied include, housing, transport, and industrial location.
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### Faculty of Business

**Dean**

M.H. Hunter, BCom, MAdmin, DipEd, FASA

### Academic Staff

#### Department of Accounting

**Head**

N.J. Allport, BCom, MBA, BEc, AASA(Sen)

**Principal Lecturers**

B.C. McDonald, BCom, DipEd, AASA

W.C. Nash, BCom, MBA, DipEd

**Senior Lecturers**

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I.A. McCormick, BCom, MAdmin, AASA

M.G. McDonald, BA, BEc

W.H. Pratt, BCom, MAdmin, DipEd, AASA

B.W. Spurrell, BCom, BA, DipEd, AASA

I.R. Taylor, BEc, MBA, DipEd, AASA (Sen)

**Lecturers**

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R. Donkin, BBus(Acc), DipBusStuds(DP), DipMechEng, AASA(Prov), MACS, GradDipEAust

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B.R. Graham, BEc, MAdmin

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P. Haslock, BEc(Hons), AASA(Sen)

M.A. Johns, BBus, AASA(Sen)

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D.G. Vinen, BEc, DipEd, ACA

**Senior Tutors**

V. Crees, BBus, AASA

L. Kloot, BA, BBus, AASA(Prov)

J. Little, BEc

A. Richardson, BEc, ACA

#### Department of Administration and Law

**Head**

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L.A.J. Zimmerman, BCom, MBA

**Lecturers**

J.G. Batros, BSc, BA, TSTC

G.W. Bell, LLB, ACTT

C. Christodoulou, BAgSc, MSc, MAdmin

B.R. Clarke, LLB, BEc, GradDipMkt

S. Edmunds, LLB

B. Evans, BAgSc, MAdmin, GradDipMA

M. Psaltis, BA, LLM, DipEd

L.J. Robertson, FRMIT, MBA

G. Watts, BCom, MBA, DipEd

**Principal Tutor**

V.J. Thomson, DipComPrac, TITC

**Senior Tutors**

R. Ives, MA, DipEd

R. McCook, LLB(Hons)

P. McIntosh, BJuris, LLB

### Department of Data Processing and Quantitative Methods

**Head**

R.W. Trelor, MSc, TSTC

**Principal Lecturer**

D.G. Adams, BCom, MAdmin, TSTC

**Senior Lecturers**

M.G. Nicholls, MEd, MACE

W.D. Wilde, BCom

**Lecturers**

K. Behan, BBus(Rec), DipBusStuds(DP), DipDramaProd, MACS

K. Bradshaw, BEc(Civil), BC, MA

D. Holmes, BCom, MACS

N.H. Kelly, BBus, AAIT, MACS, AASA(Prov)

G. Leonard, BSc

G.A. Murphy, BCom, AASA

H. Schroer, BA(Hons), BC

B. Thompson, BEc, TPTC, BEd

**Senior Tutor**

N. Beaumont, BCS(Hons), AACS, STC

W. Cosshall, BC

H. Fraser, DipBus, GradDip DP, AACs

### Department of Economics

**Head**

B.N. Nicholls, MEd, TPTC

**Senior Lecturers**

B.N. Oakman, BCom, MEd, DipEd

D.J. Thomas, PhD, MA (Acting Head)

**Lecturers**

J.I. Chamberlain, MEd, DipEd

R.P. Crane, BEc, DipEd

D.J. Owens, BEc(Hons), MAdmin

J.B. Wielgosz, BCom(Hons), MA, DipEd

P.O. Xavier, BEc(Hons), MA

**Senior Tutors**

J. Gerstman, BA, BEc

C. Barry, BEc(Hons), MEd

D. Marshall, BCom(Hons), DipEd
# Courses offered in the Faculty of Business

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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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<td><strong>Associate Diploma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>— Private Secretarial Practice</td>
<td>2 years</td>
<td></td>
<td></td>
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<tr>
<td><strong>Bachelor of Business</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>— Accounting</td>
<td>3 years</td>
<td>6 years</td>
<td>Four subjects</td>
</tr>
<tr>
<td>— Economics-Marketing</td>
<td>3 years</td>
<td>6 years</td>
<td>(including English)</td>
</tr>
<tr>
<td>— Data Processing</td>
<td>3 years</td>
<td>6 years</td>
<td>at Year 12 or equivalent</td>
</tr>
<tr>
<td><strong>Graduate Diploma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>— In Accounting</td>
<td>2 years</td>
<td></td>
<td>An appropriate</td>
</tr>
<tr>
<td>— In Business Administration</td>
<td>2 years</td>
<td></td>
<td>Diploma in Accounting, applicants must have a degree or diploma.</td>
</tr>
<tr>
<td>— In Management Systems</td>
<td>2 years</td>
<td></td>
<td>in that field. For the other Graduate Diplomas a limited number of places are available for applicants with no formal qualifications but considerable work experience.</td>
</tr>
<tr>
<td>— In Organisation Behaviour</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— In Corporate Finance</td>
<td>2 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Degree Conversion Course</strong></td>
<td></td>
<td>1½ years</td>
<td>Diploma of Business from a recognised Victorian institution</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For diploma holders to convert to a degree</td>
</tr>
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</table>
Entrance requirements

The minimum entrance requirement for all undergraduate courses is the satisfactory completion of V/SE Year 12.

In the Faculty of Business successful applicants will be expected to have passed four subjects in the one year. Since the number of applicants invariably exceeds the number of places available, selection is based on examination marks achieved and passes in Group I are given preference in the selection procedure.

A study of mathematics to at least Year 11 standard is also advised because of the importance of mathematics in business courses.

Tertiary Orientation Program

The Tertiary Orientation Program which precedes the first or common year is recognised as a V/SE Year 12 equivalent. Details of this program appear in the Swinburne Technical College 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 applied economics 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 Records Office accompanied by a photostat copy and the original of the certificate gained. The original will be returned after being checked. Students are advised to lodge these applications at the earliest possible moment. The same advice would attach 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

Students are advised to wait until the first lecture in each unit if they are in doubt as to which textbooks or references they should buy.

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 Minimum standard of progress

(a) both full- and part-time students will be expected to pass each year in at least 50% of the units for which they remain formally enrolled at the examination date;
(b) full-time students will be expected to complete the requirements of the first (common) year of the diploma degree course within two years;
part-time students will be expected to complete the requirements of the first (common) year of the diploma degree course within four years;
(c) degree conversion — students will be expected to complete the selected units of this course within four semesters;
(d) further provisions apply in postgraduate courses (see these course descriptions in this handbook).

2 Completion of common year

(a) Full-time students who pass less than 5 units* in common year, and part-time students who pass less than 2 units* in any one period of common-year studies, will be required to complete these studies (part-time if necessary), before being allowed to enrol for second-year degree units.
(b) Even students who pass 5 units* (or 2 units* for part-time students) must enrol for any outstanding common-year units before enrolling for degree units.

Thus, full-time students who pass 5 units* in common year may enrol for second-year degree units provided that they enrol for any outstanding common-year units.
Part-time students will not be allowed to enrol for second-year degree units until they are enrolling for their final common-year unit, when they may then add a second-year degree unit.

* In common year, the subjects Administrative Studies, Economics 1 and Quantitative Analysis for Business, are equivalent to 2 units.

3 Review

The progress of each student is reviewed at the end of each year or at other appropriate times.

Those who fail to reach the required standard will be advised of the course of action recommended in their particular case. If they wish to appeal against the recommendation, they may do so in writing to the Faculty Secretary, within the specified time.
Students may be required to attend an interview with the Review Committee to discuss their particular case.

If unsuccessful in an appeal against a recommendation for exclusion from further study, students will be advised by letter from the Director of the Institute. This exclusion will remain in effect for two years, after which an application for re-enrolment may be made.

4 Conditions of enrolment: number of units

(a) Full-time
Usually full-time students will remain enrolled for 4.5 units* per semester.

(b) Part-time
Usually part-time students will remain enrolled for two units per semester.
5 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 1983, Friday 15 April and 16 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) above, outlining the faculty expectations as to a standard enrolment per semester.

6 Transfer between part-time and full-time study
Subject to the fulfilment of any conditions set by the Review Committee, a student can transfer between full- and part-time study at normal re-enrolment times without special request.

7 Admission to examinations
Enrolment and satisfactory completion of prescribed assignment work, are normal prerequisites for admission to any final examination.

8 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.

9 Requests to complete subjects away from Swinburne
These should be lodged with the Faculty Secretary before enrolling in those units at another institution.

Faculty of Business Prizes
Annual awards are made by the following donors:
Bachelor of Business (BBus)

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 training program provides graduates with a sound background in the accounting skills necessary for a variety of employment opportunities in this particular field. It enables students to adapt to changing occupational demands and in particular, to any one of many different accounting systems.

The array of techniques available to management has multiplied in recent years and the accountant must at least be aware of what is involved in the areas of operations research, data processing and statistics for example, without necessarily specialising in them.

Accountants are employed in many diverse and challenging fields. These include management consulting, taxation, information science, business finance, banking, auditing systems design and corporate investigation. Other related areas are marketing, electronic data processing, real estate, stock-brokering and the administration of various governmental instrumentalities.

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 fields 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 applied economics 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.

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 firms 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
- advertising
- economic analysis
- market research
- administration

Teaching methods adopted in this course emphasise group projects, case studies and the opportunity to work on relevant practical problems.

General

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.

Full-time students

Full-time students have about four hours each week for lectures and tutorials in each subject.
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
Applied Economics

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 I A (1 unit)  
BS104 Accounting I B (1 unit)  
BS108 The Australian Legal System (1 unit)  
SM145 Quantitative Analysis for Business (2 units)

Second and third year

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
BS210 Management and Cost Accounting (2 units)  
BS206 Contract Law  
BS201 Corporate Accounting  
BS207 Law of Business Organisations  
BS306 Taxation  
BS301 Financial Management  
BS308 Information Systems Analysis  
BS300 Accounting Theory

Data Processing
BS225 Commercial Programming A  
BS210 Management and Cost Accounting (2 units)  
BS226 Commercial Programming B  
BS227 Systems Design A  
BS237 Systems Design B  
BS328 Information Systems Analysis  
BS329 Systems Software A  
BS330 Systems Software B  
BS324 Management Information Systems

Economics-Marketing
BS211 Managerial Economic Analysis  
BS231 Marketing I  
BS216 Accounting for Marketing I  
BS213 Industry and Government  
BS217 Accounting for Marketing 2  
BS232 Marketing 2  
BS215 Economic Techniques for Business  
BS334 Marketing 3A  
BS334 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. The maximum allowed is eleven units from one discipline, but some may be chosen from other faculties if prior approval is granted. Students may choose up to six elective units from the faculty of Arts but may not obtain credit for more than two Arts units at stage I.

Preclusions
BS210 Management and Cost Accounting and BS216/7 Accounting for Marketing 1 and 2, are mutually exclusive and students are precluded from counting both in a course.

Disciplines and unit codes
Accounting
BS103 Accounting I A or BS104 Accounting I B (1 unit)  
BS109 Accounting I C (1 unit)  
BS210 Management and Cost Accounting (2 units)  
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  
BS404 Advanced Financial Accounting  
BS406 Advanced Auditing  
BS407 Advanced Taxation

Applied Economics
BS111 Economics I (2 units)  
BS241 Corporate Accounting  
BS232 Management and Cost Accounting  
BS233 Corporate Accounting  
BS238 Accounting for Marketing 1  
BS239 Accounting for Marketing 2  
BS334 Managerial Economic Analysis  
BS331 Organisation Behaviour  
BS332 Business Cases  
BS333 Marketing 3A  
BS335 Marketing 3B  
BS338 Information Systems Analysis  
BS339 Systems Software A  
BS340 Systems Software B

Marketing and Administration
BS132 Administrative Studies (2 units)  
BS231 Marketing I  
BS232 Marketing 2  
BS234 Marketing and the Law  
BS331 Organisation Behaviour  
BS332 Business Cases  
BS333 Marketing 3A  
BS335 Marketing 3B  
BS338 Information Systems Analysis  
BS339 Systems Software A  
BS340 Systems Software B

Law
BS168 Australian Legal Systems  
BS181 Computers and the Law  
BS206 Contract Law  
BS207 Law of Business Organisations  
BS208 Industrial Law  
BS209 Legal Aspects of Commercial Paper  
BS308 Advanced Company Law  
BS309 Law of International Trade

Data Processing
BS225 Commercial Programming A  
BS226 Commercial Programming B  
BS227 Systems Design A  
BS327 Systems Design B  
BS324 Management Information Systems  
BS338 Information Systems Analysis  
BS339 Systems Software A  
BS340 Systems Software B  
BS422 Commercial Programming C

Faculty of Business
Professional institutes

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 requirements plus
Corporate Accounting
Financial Management
Accounting Theory
Associate membership — units required for provisional membership plus
Auditing
Taxation
Contract Law
Law of business organisations
Economics-Marketing stream
Provisional membership — completion of the degree requirements plus
Information system analysis
Corporate accounting
Accounting theory
(Not in place of the mandatory units BS216 and BS217 Accounting for Marketing 1 and 2 students must complete BS210 Management and Cost Accounting, BS301 Financial Management and BS310 Budgeting.)
Associate membership — units for provisional membership plus
Auditing
Taxation
Contract Law
Law of business organisations
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
Applied Economics stream
Mandatory units plus
Corporate accounting
Management and cost accounting
(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:
85300 Advanced Financial Management
85301 Accounting Theory
85310 Budgeting
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 pre-requisite for entry to the ACIS is completion of second year economics units BS213 Industry and Government and 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
Management and cost accounting
Auditing
Chartered Secretaries and Administrators
Associate to holders of the Bachelor of Business degree whose course has included
Corporate accounting
Financial management
Accounting theory
Managerial economic analysis
Bachelor of Business conversion course
This is a three-semester (1/2 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:
85300 Advanced Financial Management
85301 Accounting Theory
85310 Budgeting

Quantitative
SM145 Quantitative Analysis for Business (2 units)
SM221 Applied Statistics 1
SM222 Applied Statistics 2
BS241 Fundamentals of Operations Research
BS242 Linear Programming
BS343 Computer Programming and Packages
BS344 Business Forecasting
BS345 Simulation
The number of units offered each year is governed by demand and the availability of appropriate staff.
Diploma of Business (EDP) students must pass at least one of these following units:

- BS329 Systems Software A
- BS330 Systems Software B
- BS334 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.

**Diploma of Business (Accounting)**

This course is being phased out and is not available for new enrolments. Students currently enrolled in the course should consult practice details provided by the faculty.

**Associate Diploma in Private Secretarial Practice**

First year

- BS191 Private Secretarial Practice A
- BS111 Economics 1
- BS132 Administrative Studies 1
- BS102 Accounting 1S (2 units)

Second year

- BS291 Private Secretarial Practice B (2 units)
- BS281 Human Behaviour in Organizations (1 unit)
- BS282 Secretarial Administration (1 unit)
- BS110 Legal Studies 1 (1 unit)
- BS256 Legal Studies 2 (1 unit)
- BS122 Data Processing I-S (1 unit)
- AT295 Business Communications (1 unit)

Total number of units = sixteen.

The Associate Diploma is of two years' duration full-time and is not generally available on a part-time basis. Students are admitted with or without a background of stenographic skills, additional time being allocated within the course for the development of these. A prior knowledge of accounting and economics would be useful although not essential.

The course is designed for students who wish to become private secretaries at management level. Diplomates are eligible to apply for Licentiate Membership of the Institute of Private Secretaries. Following two years' experience they may apply for Associate Membership.

Students who require an intensive course in shorthand and typewriting, would be better advised to refer to the Swinburne Technical College handbook where descriptions of business certificate courses are given in detail.

**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 interpersonal relationship 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 complete bridging studies.

**Course structure**

**Prior to 1978**

Students who enrolled for the first time prior to 1978, must continue their courses under the regulations existing at that time. These are listed in the handbooks for 1978 and earlier editions.

**Revised 1978 structure**

The course comprises eight units, four of which must be selected from Group 1 (including BS651 Current Issues in Accounting) and two from Group 2. The final two units may be either:

(a) two units selected from Group 1 or 2 provided that the units selected form a reasonable course of study and are approved by the faculty enrolling officer, or
(b) a research paper (BS751) which will include some formal preparatory studies in methodology.

The number of units offered each year is governed by demand and the availability of appropriate staff.

**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
The range and structure of subject areas should meet the detailed course objectives. BS585 Current Issues in Accounting 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 remaining 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 Standards of Progress approved for the undergraduate courses also apply to students in this course. The following should be read in conjunction with paragraph 1(d) of the requirements 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 BS585 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**

Associate members of the Australian Society of Accountants are eligible to advance to Senior Associate status after having completed the Graduate Diploma in Accounting course. At the same time, students may satisfy the prerequisites of the 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 or experience in employment is sufficient indication of their capacity to complete the course.

Admission is determined by a selection committee. In addition to academic achievements selection depends upon maturity, work experience and executive potential. Accordingly, each applicant is invited to attach to the application form a detailed curriculum vitae.

It is expected that most people who gain direct entry to the course should complete the qualification with two years of part-time study, but, in order to continue in the course, students must maintain a satisfactory standard of progress.

**Course structure**

**First year**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS547</td>
<td>Introduction to Financial Management</td>
</tr>
<tr>
<td>BS546</td>
<td>Economics</td>
</tr>
<tr>
<td>BS581</td>
<td>Administration of Organisational Systems</td>
</tr>
<tr>
<td>BS594</td>
<td>Quantitative Methods</td>
</tr>
<tr>
<td>BS595</td>
<td>Marketing Management 1</td>
</tr>
</tbody>
</table>

**Second year**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS582</td>
<td>Administration of Human Resources</td>
</tr>
<tr>
<td>BS583</td>
<td>Financial Structure, and Policy</td>
</tr>
<tr>
<td>BS587</td>
<td>Business Policy</td>
</tr>
<tr>
<td>BS596</td>
<td>Marketing Management 2</td>
</tr>
</tbody>
</table>

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 four second-year units are compulsory. In the first year, candidates are introduced to current thought in the area of marketing, economics, finance and organisation theory. Second year covers the important areas of marketing strategy, financial management, human relations and organisational change. These aspects are viewed in the overall light of corporate strategy (business policy). Thus, the emphasis in the second year is on the effective application of knowledge acquired in the first year.

Because of the integrated nature of the course, students are required to complete all first-year studies before attempting second year.
Preclusions

Depending on previous training, candidates may be precluded from some of the first year units and assigned 'alternative' units in their place.

Alternative units

These units are available in the evening for those students who are precluded from more than one first year unit. Students in this category who have not studied labour relations before must select BS464 Australian Industrial Relations as their first alternative. Other alternative units are chosen after consultation with members of staff.

The following units may be available in 1983:

- BS551 Current Issues in Accounting
- BS552 Auditing and EDP*
- BS554 Contemporary Auditing*
- BS555 Corporate Taxation
- BS556 Taxation Planning
- BS559 Investment Analysis*
- BS563 Current Issues in Economics*
- BS564 Australian Industrial Relations
- BS567 Systems Analysis
- BS577 Management Systems
- BS585 Secretarial Practice and Procedures
- BS586 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 co-operative thought. In addition to classroom time, formal syndicate studies are programmed for each week. During these formal sessions ample opportunity arises for questions and discussion 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 8.00am and 10.00am and between 10.30am and 12.30pm. In addition, special seminar/syndicate sessions will be scheduled for one evening 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:

- those with undergraduate accounting or business qualifications in which only introductory finance courses were available or chosen.
- graduates from disciplines, such as engineering, law, data processing or other related fields, who have moved, or want to move, into financial management or corporate finance positions.

Course objectives

- to provide participants with a broadly-based training in all major aspects of contemporary corporate finance.
- to integrate the associated disciplines encompassed by the corporate finance function (e.g. economics, law, corporate strategy, quantitative methods) with the corporate finance core of the course.
- to improve significantly, specific decision-making and management skills by emphasising the practical application of theoretical concepts developed during the course.

Entrance requirements

The course is intended for graduates 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**

- BS552 Corporate Financial Management 1
- BS562 Financial Institutions and Markets

**Semester 2**

- BS553 Corporate Financial Management 2
- BS564 Legal Aspects of Finance

Second year

**Semester 1**

- BS574 Investment Management
- BS571 Quantitative Methods in Finance

**Semester 2**

- BS563 International Finance and Monetary Theory
- BS575 Research Project (practical application of concepts and techniques)

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.
Professional institutes
On completion of the Graduate Diploma in Corporate Finance course Associate members of the Australian Society of Accountants are eligible to advance to Senior Associate status.

Standards of progress
The 'Standards of Progress' approved for the undergraduate courses also apply to students in this course.

On completion of the 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
Sessions for both first and second year units have been organised on a block system. All unit sessions will be held on Mondays between the hours of 3.00pm and 5.00pm and between 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 three groups as follows:

**Group 1**
Unless preclusions apply, the six units are compulsory

BS672 Systems Analysis
BS673 Commercial Systems Design
BS674 Current Issues in Systems Design
BS675 Systems Project Management
BS676 Operations Management
BS677 Management Systems

**Group 2**
Students must take an approved pair of units from this section. Currently approved pairs are:

- BS588 Administrative Policy combined with either BS589 Management Organization and People or BS583 Marketing Administration 1 or BS586 Personnel and General Administration or BS581 Administration of Organisational Systems

- BS583 Marketing Administration 1
- BS584 Marketing Administration 2

**Group 3**
Candidates have certain flexibility in selecting a combination of units which meet their individual requirements.

- BS658 Administration of Organisational Systems
- BS652 Administration of Human Resources
- BS657 Introduction to Financial Management
- BS552 Financial Structures and Policy
- BS581 Administration of Organisational Systems
- BS552 Administration of Human Resources
- BS657 Introduction to Financial Management
- BS552 Financial Structures and Policy

Counselling seminars
The number of units offered each year is governed by demand and the availability of appropriate staff.

Preclusions
Students with preclusions in Group 1 units are required to take sufficient electives from this group to make a total of eight units for the course.

*Only students with two Group 1 preclusions and above average results in the first year may elect to take BS678 Systems Development Project.*

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.
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 are 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 the analysis of these factors.
2. An opportunity to examine and to practise problem-solving and decision-making when handling people in the organisational context.
3. A broadened outlook beyond their immediate area of specialisation.

Course structure

The program is an intensive two-year, part-time course. The units (all of which are compulsory) are listed below. The first year introduces candidates to the areas of psychology and interpersonal skills, together with a study of organisation theory. The second year deals with the management of conflict and change, and leadership. These aspects are examined and applied in the overall pattern of organisational strategy.

Because of the integrated nature of the course, students are required to complete all their year one studies before attempting year two.

**Year one**

- AT693 Psychology and Interpersonal Skills
- 85681 The Organisation

Both these units run for the whole academic year and have a total class time commitment of 5 hours per week.

**Year two**

- US682 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.

Time-table
Sessions for both year one and year two units are organised on a block system. Both first-year units are offered on Wednesday morning 8.00am to 1.00pm and second-year sessions on Friday 8.00am to 12.30pm. Special or syndicate sessions may be scheduled where appropriate. A residential or seminar program is scheduled each year as an integral part of the course.

Note
A considerable out-of-class time commitment is a necessary element in this learning experience.

Lecturers
The teaching program is conducted by staff from the faculties of both Business and Arts.

Business subject details
Common year — degree and diploma subjects

BS102 Accounting 1S
Prerequisite, nil.
A terminal subject in the associate diploma course in private secretarial practice, in which a basis of accounting theory and techniques is related to the work of the private secretary.
Topics include:
- basic accounting concepts;
- office accounting techniques and controls, payroll preparation, asset valuations (book and tax records), inventory control relationships to computer systems; budgeting;
- accounting for different forms of ownership — sole proprietorships, partnerships, companies, manufacturers, contractors and service performers;
- interpretation of the balance sheet.

Textbook

BS103 Accounting 1A
Prerequisite, nil.
An introduction to accounting methods and techniques for students with no prior knowledge of book-keeping or accounting.
The unit is divided into three segments. Topics covered include the accounting function; basic concepts and terminology; status reports; performance reports; the accounting equation, recording methods; balance day adjustments; final reports; accounting procedures for debtors, creditors and inventories; bank reconciliation statements; incomplete records; accounting for owners equity in alternative types of business organisations.

References
Goldberg, L. and Hill, V.R. Elements of Accounting, Melb., Melbourne University Press, 1973

Textbook

BS104 Accounting 1B
Prerequisite, a result of ‘C’ or better in HSC Accounting or equivalent experience.
The object is to provide a supplementary unit in accounting methods and techniques for students with some prior knowledge of book-keeping or accounting. The course content is as for BS101 — see above.

Textbook
BS108  The Australian Legal System
This unit introduces students to our legal system. The general objectives are:

- to provide an understanding of the nature of law, its historical origins and institutional setting in Australia;
- to provide an understanding of the conventional processes of legal reasoning used in the system;
- to create awareness of the influence of the judiciary in the law-making function and in so doing to detail areas of substantive law selected from tort and contract;
- to create awareness of the role and limitations of the non-court tribunals and commercial arbitrators as alternatives to the court system;
- to create awareness of the interrelationships which exist between the courts, parliaments, the non-court tribunals and commercial arbitrators.

References
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979
Caffrey, B. Torts for the Non-Lawyer. Canberra, Signal Books, 1979
Howard, C. Australia's Constitution. Syd., Penguin, 1978
Legal Resources Book

BS109  Accounting 1C
Prerequisites: BS103 or BS104 Accounting 1B
Accounting theory and practice are examined in a historical cost accounting system. This unit includes the following topics: revenue and expenses; accounts receivable; cost of sales and inventory valuation; assets and depreciation; liabilities; accounting for shareholders equity; performance evaluation; analysis and interpretation and funds statements.

References
Barton, A.D. The Anatomy of Accounting. 2nd edn, St. Lucia, University of Queensland Press, 1977
Textbook

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 processes of legal reasoning used in the system;
- to create awareness of the influence of the judiciary in the law-making function and in so doing to detail areas of substantive law.

Prescribed texts
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979
Equal Opportunities Act 1977
Commercial Clerks Determination No 2, 1981

References
Legal Resources Book. Melb., Fitzroy Legal Service, 1979
Pearce, D. Statutory Interpretation. Melb., Butterworths, 1974

BS111  Economics 1
In this subject, some of the methods adopted by economists are used, to analyse economic problems within the framework of the Australian economic system. The course commences by examining the role of the contemporary market system in allocating resources and distributing income and wealth. This is followed by a detailed analysis of the determinants of the level and rate of change of output, employment, prices and international reserve. Attention is then focused on the role of fiscal, monetary, prices and incomes, and balance of payments policies in achieving, simultaneously, internal and external balance.

References

BS121  Introduction to Data Processing
This is an introduction to commercial data processing for business students. Students should develop an appreciation of the possible benefits that may accrue as well as the problems associated with using computers. It provides a basis upon which later units can be built.

Topics include:
- introduction to information systems including system objectives and the flow of data through a system;
- form layouts appropriate for specifying output reports, and
- sequential magnetic files;
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
Condron, R.J. Data Processing with Applications, Reston, Va., 1978

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 relations 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


Textbook


BS181 Computers and the Law

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:

(a) patents and copyright;

(b) negligent manufacture;

(c) negotiating and concluding contracts for the acquisition, lease or rental of computer resources;

(d) performance deficiencies involving breach of contract, breach of warranty or misrepresentations;

(e) output errors or performance malfunctions involving, e.g. defamation or third party economic loss.

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,

(b) the issue of 'invasion of privacy', with a view to determining the appropriate legal response to the dangers of personal data storage.

References

A. In meeting objective (i), general texts provide basic material, for example,


Specialised books, articles and legal cases will also be referred to.

B. In meeting part (a) of objective (ii), the following publications may be referred to:

- Purvis, R., Corporate Crime, 1981

Specialised articles will also be referred to.

In meeting part (b) of objective (ii), the following publications may be referred to:

- University of New South Wales Occasional Paper No. 2, 1977, Privacy Uni. NSW. Kensington, NSW

Again, specialised journal articles will be referred to.
BS191 Private Secretarial Practice A
Prerequisite, nil
A first year subject designed to introduce the skills of shorthand and typewriting to trainee secretaries, to use these in a practical manner and at the same time gain background knowledge of business practices and activities. Final speeds of 80-140 respectively, on typewriting to trainee secretaries, to use these in a restricted manner, are expected.

Textbooks
Complete booklist available upon enrolment

SM145 Quantitative Analysis for Business
A first year subject in the Faculty of Business common year. For students without an HSC mathematics or equivalent, the course is preferred 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 maxima and minima, 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 include inference including probability distributions; sampling theory and estimation, confidence intervals; index numbers; correlation and regression; time series analysis.

References
Emerson, L. and Paquette, L. Fundamental Mathematics for the Social and Management Sciences, Boston, Allyn and Bacon, 1975
Neter, N. et al. Fundamental Statistics for Business and Economics, Boston, Allyn and Bacon, 1973

Degree units

BS201 Corporate Accounting
Prerequisite, BS109 Accounting 1C
A second year unit in the accounting degree course in which accounting for corporations is studied. Where appropriate, the relevant law is integrated with the accounting. For this to be achieved, emphasis is upon the Companies Act and relevant case material.

A progression of areas is investigated in much the same sequence as would be experienced by an expanding corporation.

Formation, availability of profits for distribution, and reporting of the affairs of corporations are studied initially. Following this (and the strongest emphasis within the course), corporate expansion is thoroughly explored. A full study is made of amalgamations, mergers, takeovers, pooling of interests, and group accounts. The resultant accounting, organisational and legal effects of these alternative arrangements is of major concern. The final areas of the course are concerned with capital reconstructions and liquidation of the corporation.

In all topics, emphasis is given to both the concepts and the techniques of accounting. Alternatives to traditional approaches will be evaluated.

References
Australian Society of Accountants: Members’ Handbook
Coffey, R. Corporate Accounting in Australia. Clayton, Prentice-Hall of Australia, 1980
Guide Book to Australian Company Law. 3rd edn, North Ryde, CCH, 1976
Australian National Companies and Securities Legislation, C.C.H. Australia or Government Printer.

BS206 Contract Law
Prerequisite, BS106 Australian Legal Systems
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.

References
Caffrey, B.A. Guidebook to the Contract Law in Australia. 1st edn, Syd., CCH Australia Ltd., 1980
Guest, A.C. Chitty on Contracts. 24th edn, Lond., Sweet and Maxwell, 1977
Pannam, C.L. and Hocker, P.J. Cases and Materials on Contract Law. 4th edn, Syd., Law Book Co., 1972
Goods Act 1958 (Victoria)
Transactions. Syd., Butterworths, 1979

Textbook
Pannam, C.L. and Hocker, P.J. Cases and Materials on Commercial Transactions, Syd., Butterworths, 1979

BS207 Law of Business Organisations

Students enrolled in this unit will be expected to have passed BS206 Contract Law. This unit is compulsory for students in the accounting stream; optional for others

The intention here is to undertake a comparative analysis of the form of business organisations.

Essentially this involves an analysis of corporations, partnerships, trusts and unincorporated associations.

Prescribed texts
Companies Act 1981
Partnership Act 1958
Trustee Act 1950

References
Afterman, A.B. and Baxt, R. Cases and Materials on Corporation and Associations. Syd., Butterworths, 1972
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 mutual 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 dismissal, and employment related injuries as examples of temporary or permanent cessation of work.

References


Guidebook to Australian Industrial Law. 2nd edn, Sydney, CCH Australia Limited, 1981

Guidebook to Workers Compensation in Australia. 2nd edn, Sydney, CCH Australia Limited, 1980


Sykes, E.I. and Yenbury, D. Labour Law in Australia Sydney, Butterworths, 1980

Sykes, E.I. The Employer, the Employee and the Law. 3rd edn, Sydney, Law Book Co., 1973


Conciliation and Arbitration Act 1904 as amended (Cth), latest edn, Sydney, CCH Australia Limited.

BS209  Legal Aspects of Commercial Paper

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 encumbrance 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.

Prescribed text


References


Bills of Exchange Act 1909 (Commonwealth)

Instruments Act 1958 (Victoria)

Credit Act 1981 (Victoria)

Chattel Securities Act 1981 (Victoria)

BS210  Management and Cost Accounting

Prerequisite: BS109 Accounting 1C

A mandatory second year degree subject for both accounting and data processing streams.

The course develops from basic costing concepts into an examination of the design and operation of costing systems for inventory measurement, decision making and control. Among the specific topics studied are standard costing, incremental costing, discounted cash flow techniques, cost volume profit analysis, behavioural aspects of accounting and transfer pricing.

Prescribed text


References


Bird, R.C., ed. Contemporary Cost Accounting and Control 2nd edn, Belmont, Cal., Dickinson, 1977


BS211  Managerial Economic Analysis

Prerequisite: BS111 Economics 1

Students who are contemplating major studies in economics should include this unit and/or BS213 Industry and Government in their courses.

The unit shows how economic analysis can be used to assist business decision-making. Empirical studies are used as means of illustration. It deals with the following topics: demand analysis (including empirical demand studies and forecasting); production and cost analysis (opportunity cost, short-run and long-run production and cost problems); profit and goals of firms; pricing policies of firms and public utilities and investment analysis.

References


Davies, J.R. and Hughes, S. Managerial Economics, Plymouth, U.K., Macmillan and Evans, 1977


BS213  Industry and Government

Prerequisite: BS111 Economics 1

Students who are contemplating major studies in economics should include this unit and/or BS211 Managerial Economic Analysis in their courses.
The unit deals with the structure, conduct and performance of industry in contemporary economies with special reference to Australia and considers the role of government in these economies. A study of an Australian industry is an integral part of the course. Monopoly and the modern corporation (including the impact of transnational corporations), critiques of corporate capitalism and specific approaches to industry policy are discussed.

References

BS214 Industrial Relations
Prerequisite, BS111 Economics 1
In this unit, the nature of an industrial relations system is considered, with emphasis on the Australian experience. Particular emphasis is directed towards the economic environment and its impact upon the behaviour of the parties in the system. Topics to be covered include: relationship between the Industrial relations and economic systems parties: the industrial relations and economic roles of trade unions, employer associations, industrial tribunals, and governments; rule-making processes: with particular emphasis upon dispute settlement and wage fixation.

References

BS215 Economic Techniques for Business
Prerequisites, BS111 Economics 1 and SM145 Quantitative Analysis for Business (or an approved equivalent)
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. Topics to be studied include: sources of data, data collection and presentation; use of relevant commercial statistical packages; analysis of significant economic and social indicators – Australian national accounts, index numbers, production, demographic and financial data; business cycles; economic modelling and business forecasting.

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 1
Prerequisite, BS109 Accounting 1C
This unit together with BS217 is a mandatory unit in the applied economics stream. They are not available to students taking either the accounting or data processing stream.

BS217 Accounting for Marketing 2
Prerequisite, BS216 Accounting for Marketing 1
Objective
To provide students with an analytical framework and methodology for evaluating marketing policy decisions.
Content
Role of marketing policy decisions in the attainment of an organisation's financial objectives.
Analytical techniques for evaluating the impact of alternative marketing policies on financial objectives, such as:
- cash flow
- profit margins
- working capital requirements
- capital structure
- return on investment
- business risk
- financial and operating leverage
- taxation considerations
Profitability reporting for marketing management using segment analysis.
Transfer pricing between manufacturing and marketing divisions
Implications for marketing policy decisions and performance evaluation.

References

BS225 Commercial Programming A
Prerequisite, BS121 Introduction to Data Processing
In this unit, a knowledge of the fundamentals of program development and elementary COBOL coding is presumed, as well as an understanding of basic computer concepts.
While ANS COBOL language facilities are covered in some depth, and solutions to the major programming assignments will be written using COBOL, other industry-accepted commercial languages are also examined and compared. These include BASIC, RPGII and PL/I.
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 manipulation, table handling.

**Program development techniques.** The stages leading from the system specification to the coding activity. Problem analysis. Logic aids e.g., pseudocode and structured flowcharts. Documentation. Program structure. Program design for implementation and management.

**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**

Marketing 2 is a logical extension of Marketing 1. Marketing 2 also introduces the students to the elementary aspects of marketing research.

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; 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 product, pricing, distribution and advertising strategies.

Method of instruction
Similar to that of Marketing 1, but students will be more involved in field work and research into the Australian consumer environment.

References

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 1974/77. 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; consumer financing and credit sales.

Students are required to purchase the following Acts:
- Goods Act 1958 (Vic.)
- Consumer Affairs Act 1972 (Vic.)
- Trade Practices Act 1974/77 (Cwlth)

References
An Introduction to Trade Practices and Consumer Protection in Australia, OCH Australia Ltd, 1977
Edwards, R. Issues in Marketing Law, Syd., NSW University Press, 1982

BS241 Fundamentals of Operations Research
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 operational research methods 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 working capital requirements, including an evaluation of approaches to inventory and cash management problems; forecasting, with particular emphasis on short-term product demand; general approaches to planning and decision-making including the application of decision theory.
- 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.

Preliminary reading

References

BS242 Linear Programming
Prerequisite. BS241 Fundamentals of Operations Research or equivalent

This unit examines generally the application of linear programming and related methodology within the context of realistic business and economic problems. The emphasis of the course will be on formulation and the interpretation and analysis of results.

Consideration will be given to:
- sensitivity analysis
- scheduling
- fixed charges
- discrete solutions
- multiple objectives

within the context of production, marketing, economic and finance environments.

Case studies and assignments are an integral part of the course and are evaluated as part of the overall assessment in the unit.

References
A detailed list of texts and journal articles is made available.

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 interactive computing. 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 the PDP 11/40 and FACOM computers. 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;
- report formatting.

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.
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 forecasts, analysis of trend, seasonal and cyclical factors. Identification of appropriate areas for application;
- causal models — the use of linear regression models. The appropriate analysis;
- identification of appropriate areas for application;
- the nature and use of input-output analysis. Construction of input-output tables and solution of system of relationships between the individual firm and national statistics;
- use of lag indicators;
- qualitative procedures — including the role of market research, delphi methods, consensus etc. in predicting future behaviour.

References

Granger, C.W.J. and Newbold, P. Forecasting Economic Time Series. N.Y., Academic, 1977
Firth, M. Forecasting Methods in Business and Management. Lond., Arnold, 1977
Robinson, J.J. Planning and Forecasting Techniques. Lond., Westdenfield and Nicholson, 1972

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 accounting, economic and market research areas of business statistics.

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;
- demography: rates and ratios; The Life Table; population estimates and projections;
- experimental design: design 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.

BS256 Legal Studies 2

Prerequisite. BS106 — ALS

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

Nie, N. SPSS. 2nd edn, N.Y., McGraw-Hill, 1975

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 realities of statistical analysis of commercial production, sales and marketing of goods and services.

Experimental design and the analysis of variance: X² and F distributions. Tests for independence and homogeneity. One-way and two-way analysis of variance;
- multiple regression and correlation: dummy variables, multicollinearity and serial correlation. Graphical and numerical methods in the examination of regression residuals;
- statistical computing: more complex statistical analysis using SPSS.

Survey research data processing with SPSS — an introduction. Handling Australian census data.


References

Nie, N. SPSS. 2nd edn, N.Y., McGraw-Hill, 1975

BS281 Administrative Studies 2

(Human Behaviour in Organisations)

Prerequisite. BS132 Administrative Studies 1

This one-semester unit is primarily concerned with work problems related to arising from human behaviour in business organisations. The teaching method will be based on a combination of lectures, case-studies and class discussions.

References

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, and problems associated with, the general, financial, personnel, production, marketing and data processing managers and the company secretary.
The teaching methods are 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
Davis, K. and Blornstrom, R.L. Personality Theory; Values and Values Classification; Motivation; Perception, Learning, Perception, Conflict and Conflict management; Change and the Resistance to Change: The Effects of Organisational Structures on Human Behaviour; Organisation Development (OD).

BS291 Private Secretarial Practice B
Prerequisite: BS291 Private Secretarial Practice A
A second year unit in which more advanced practical application of the stenographic skills is made. Shorthand and typewriting speeds of 110wpm respectively are required for a pass, together with corresponding stenography ability. Assignments given on secretarial knowledge and duties.

Textbook
Complete booklist available upon enrolment.

AT295 Business Communications
Prerequisite: nil
An annual 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
List available on enrolment.

BS300 Accounting Theory
Accounting Theory is a mandatory unit (replacing BS303 Advanced Accounting Theory). The unit is designed to provide a conceptual framework of accounting.
The objectives are to:
develop a prescriptively-oriented, conceptual framework that is related to:
asset and liability definition and valuation;
income theory;
provide students with an introduction to:
the methodology used to acquire knowledge:
the methodology that has been used in the attempts to formulate 'global' accounting theory;
the application of the prescriptively oriented methodological framework developed above, whereby various current financial accounting practices and suggested alternatives to these practices may be rationally evaluated.
The specific topics studied include, asset and liability, valuation, income theory, accounting (or inflation in the context of both relative and non-relative price-change accounting), accounting methodology, interperiod income tax allocation and accounting for long-term financial leases.

Textbook

References
Barton, A.D. An Analysis of Business Income Concepts. Lancaster, University of Lancaster. International Centre for Research in Accounting, 1975
(Sludents intending to study [BS301] Advanced Financial Accounting subsequently should purchase this.)
Hendrikse, E.S., Accounting Theory. 3rd edn, Homewood, Ill., Richard D. Irwin, 1977
Sterling, R.R., ed. Research Methodology in Accounting Lawrence, Kansas, Scholars Book Co., 1972

BS301 Financial Management
Students enrolled in this unit will be expected to have passed BS201 Corporate Accounting.
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 project 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 opportunities in the short-term money market and long-term versus short-term financing are specific items of working capital management that are considered.
The unit also includes a financial analysis of take-over proposals.
Students are required to submit a major case-study.

Textbook

References
Doctoroff, M. Company take-overs and Mergers in Australia Melb., Gower Press, 1972
**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 analyzing risk in this manner are discussed.

**References**


Harvard Business Review, *Finance Series*

Harvard Business Review, *Capital Investment Series*


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**BS304 Auditing**

Students enrolled in this unit will be expected to have passed BS201 Corporate Accounting.

This unit deals with both the theoretical and practical aspects of auditing. The objectives are to provide students with an understanding of a rigorously defined conceptual framework, against which the entire audit process may be evaluated. The conceptual framework postulated relates to the satisfaction of empirically determined user needs in the context of a structured scientific method.

The issue of user needs is a recurrent theme throughout the course, as is the issue of intersubjectivity or repeatability, whereby the audit process may be objective. Emphasis is given to the distinction between the descriptive (what is) and the normative (what should be), whereby current audit practice may be described and evaluated against the conceptual model.

Theoretical aspects of auditing are initially presented in lectures, whereas the practical aspects are dealt with wholly in tutorials. It must be stressed that although the lecture topics detailed below are listed as discrete topics, the approach taken in lectures, highlights, and emphasizes the necessary interrelationships between these topics. Similarly, tutorials are used to provide the link between the theoretical and practical aspects of auditing. Consequently, tutorials reinforce the theoretical issues initially raised in lectures, as well as providing a medium for a study of the concepts, objectives and methodology involved in the detailed internal and final audit procedures.

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, judgement, classical and Bayesian approaches to the sufficiency of audit evidence; computer audits, internal and management audits and materiality.

**BS306 Taxation**

Students enrolled in this unit will be 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 include 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**

Australian Federal Tax Reporter, CCH Australia Ltd.

*CCH Australia Limited Victorian Companies Act and Regulations*, latest edition


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**BS308 Advanced Company Law**

Students enrolled in this unit will be expected to have passed BS207 Law of Business Organisation.

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 miomance, company finance and company takeover activity.

**Prescribed texts**

*CCH Australia Limited Victorian Companies Act and Regulations*, latest edition

*CCH Australia Limited Victorian Companies (Acquisition of Shares) Act, 1980* (Cwlth)

**References**


Dedicated references to journal articles will be given to students.

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**BS309 Law of International Trade**

Students enrolled in this unit will be 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 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 protectionism; 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

Craig, D. International Law Syd., Butterworths, 1976
Punnet, R. and Daines, R. The Law and Practice of Commercial Letters of Credit, Shipping Documents and Termination of Disputes in International Trade. Syd., Butterworths, 1975
Sykes, E. and Pryles, M. International and Interstate Conflict of Laws Syd., Butterworths, 1975

BS310 Budgeting

Students enrolled for this unit will be expected to have passed BS210 Management and Cost Accounting and BS301 Financial Management or alternatively be enrolled at present for BS301

This is a final year course designed to develop and integrate the planning, control and decision-making techniques and skills introduced in management and cost accounting and financial management.

The unit also draws on the areas of operations research, economics and marketing. The course includes a study of the objectives of budgeting and the behavioural implications of alternative approaches to budget formulation. Both the operating and financial budgets are studied in detail with emphasis on the interrelationships and interdependencies between the various components. Techniques such as forecasting, bottleneck identification, simulation, cost-volume-profit analysis, discounted cash-flow analysis, standard costing and a number of optimisation models are studied in the context of their uses and their relation to budgetary planning.

The implications of alternative cost and financial structures for risk and return are also examined.

Budgeting problems during times of rapidly changing prices. The zerobase 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 is its nature and applications.

Budgetary planning and control in non-manufacturing and non-profit organisations.

References


BS311 Public Finance

Prerequisite, BS111 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 forms of consumption taxes. 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. Lond., Martin Robinson, 1978

BS312 Economic Research

Prerequisites, BS211 Managerial Economic Analysis or BS211 Industry and Government

The Intention in this unit is to broaden the 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 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).

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 I

This unit provides a study of the nature of and developments in Australian finance markets and considers various aspects of monetary theory and policy. The topics to be studied include:

- finance markets: nature and role of finance; economic development and financial development, evaluating the performance of finance markets; short-term money markets — official, buy-back, commercial bill, and inter-company loan; capital markets — primary and secondary; rigidity and distortions in the finance markets; the question of controls;
- monetary theory, classical, Keynesian, neo-Keynesian and modern quantity theories of the relationship between money and output, employment and prices;
- monetary policy: choice of policy instrument, rules and discretion; strength of monetary policy; monetary policy in Australia; monetary policy in an international economy.

References

Davis, K. and Lewis, M. Monetary Policy in Australia. Longman Cheshire, Melbourne, 1980
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 mix — 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.

References
Kasper, W. and Parry, T.G. Growth, Trade and Structural Change in an Open Australian Economy, Kensington Centre for Applied Economics, University of NSW, 1978

BS324
Management Information Systems
Prerequisite: BS327 Systems Design B
In this unit, a student develops an awareness of the scope and the problems associated with computerised management information systems. As this is the final systems unit, it builds extensively on material taught in previous units. The theory is developed using practical assignments and seminars where appropriate.

Topics covered:
theories of information including quality, uses, sub-systems, information requirements by levels of management, effect of computer on the flow of information, the data administrator; project planning, selection, justification, phasing and evaluation; selection and justification of resources and methods to be used
including hardware, software, packages, distributed systems, suppliers, consultants, software houses and bureaux, data processing staff;
the design process, design as an iterative and a creative process, checking of stages against objectives, re-evaluation of design;
the implementation process, impact of new techniques on planning, trial runs, file creation systems, degraded operation, management and information systems, distinguishing the roles of management and data processing staff, education and training, management involvement and influence;
information systems failures, symptoms, causes, responsibilities of users;
social implications of using computers, privacy, security and control; future developments in the industry.

BS327
Systems Design B
Prerequisite: BS227 Systems Design A or BS224 Commercial Application Packages.

Data base and data communications techniques are now established as the means by which the rapid growth demanded of the data processing industry in the foreseeable future, may be achieved.

Students successfully completing this unit will be able to:
identify the symptoms of isolated application development, and state the benefits which application integration, via a data base approach, can realise;
demonstrate the importance of data independence, data structuring, and data base administration in achieving the objectives of data base; compare broad features and merits of DML, CODASYL and Relational Data Base Management Systems;
design simple data bases using the techniques of data analysis and normalisation;
classify on-line applications into their classical types, and identify the purpose of and benefits to be derived from such application types;
use the terminology of data communications to describe data flow through the hardware components of typical on-line system configurations, including distributed systems;
match the requirements of an on-line application to characteristics of available terminal types, including intelligent terminals;
state how typical functions of modern data communications software packages can improve the productivity of on-line application developers, and end users;
list the decision steps involved in an on-line system design, and be able to apply certain design calculations (such as queueing theory) and human factors decisions (such as screen design) to a simple on-line application.

References
Bingham, J.E. and Davies, G.W.P. Planning for Data Communications. Lond., Macmillan, 1977

BS328
Information Systems Analysis
Prerequisite: BS121 Introduction to Data Processing, BS210 Management and Cost Accounting must have been attempted.

The intention is to develop an awareness of the suitability of systems analyses as a means of integrating a number of skills for problem-solving purposes. The principal emphasis will be towards commercial data processing applications, although the technique should be appreciated for its broader applicability. The approach will be directed to identifying and defining problems rather than specifying equipment solutions.
Topics covered:
the systems approach including objectives and the life cycle of systems. Investigating systems, techniques of fact finding, analysis and presentation;
systems control, the need for accuracy, security and the stages of control;
resources, provision of data processing services;
project evaluation, feasibility study, economic evaluation, estimating techniques;
implementation, education of staff, change-over methods, project control and evaluation;
documentation through all phases of the systems life cycle
The theory is developed using practical assignments and case studies of an investigational nature.

References
A detailed reading guide is issued for each topic, and general references include:
Cushing, B.E. Accounting Information Systems and Business Organizations, Addison-Wesley, 1978

BS329 Systems Software A
Prerequisite, BS226 Commercial Programming B

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, ISP:
examples: low level languages;
machine instructions, assembler, macro language, 110 programming — file/device handling, data communications, channel programming.

Systems programming techniques may include:
Data structures:
list processing — stacks, queues and dequesues, and their representation in sequential and linked storage;
other structures — trees, digraphs;
aplications — the control of processes; physical file and data base structures.

The dynamic coding environment:
the problems — example situations: real-time systems and general multi-programming;
coding techniques — re-entrant, re-usable, refreshable (and recursive) coding;
resource sharing — general inter-program communications, double update deadlock;
Common algorithms, including: compaction, encoding, sorting, searching.

In addition, several practical programming projects are undertaken.

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 FACOM Operating System COP/IV-II 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.

Technical system management
The systems programmer, system performance monitoring and tuning, managing system failures and job accounting.

References
Reading guides will be issued by the lecturers

BS331 Organisational Behaviour
Prerequisite, BS332 Administrative Studies I

A third year unit in the degree course in business

One of the principle objectives is to help prepare students for their entry into organisational life, or in the case of part-time students to allow them to understand their organisational environment better. 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. Students gain an insight into the behaviour of people as individuals and group members within the organisational context and as an important by-product, learn something about themselves.

Recommended reading
Kelly, J, Organisational Behaviour. 3rd edn, Homewood Ill., Irwin, 1980

Textbooks
BS332 Business Cases

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 the various 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 organisation functions; to give students an opportunity to develop stages of their studies; to give students an overview of how an important aspect of the course. Students may also be given the opportunity to investigate a real life business/non-business problem.

References

To be advised

BS334 Marketing 3A

Prerequisite, BS322 — Marketing 2

Marketing 3A is a mandatory unit in the applied economics 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
- design, administration and processing of questionnaires
- sampling techniques
- advertising research

These skills are a valuable asset for all people in business and especially so for those in speciality marketing positions such as market analysis, product management and advertising.

Framework

The unit is divided into six sections:

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.

Research design

Concepts of measurement and sources of error. Observation, surveys and experimentation. Group discussions and depth interviews.

Test marketing.

Questionnaire design, administration and processing

Content, phrasing, response format, question sequence and testing packages.

Statistical analysis using standard analysis.

Research design guidelines and training.

Sampling design

Census or sample

The sampling process

Determining sample size

Problem-oriented research

Advertising effectiveness

Corporate image research

New products and concepts

BS335 Marketing 3B

Prerequisite, BS322 Marketing 2

Objective

In this unit, some of the more important aspects of marketing are dealt with, including the implementation of a marketing plan. As such, the unit will provide a practical foundation for students wishing to pursue a future career in marketing.

Framework

Advertising

- the communications mix
- the role and objectives of advertising
- corporate versus product advertising
- developing advertising strategies
- the role of market research in advertising
- how to write a creative brief
- agency and media selection
- measuring advertising effectiveness

Industrial marketing

- industrial and consumer marketing
- characteristics of the industrial consumer
- special aspects of industrial marketing strategies

Management of the sales force

- the sales manager, his or her job and career
- selection of salespeople
- sales training programs
- compensation plans
- supervision of salespeople
- sales analysis and evaluation
- evaluation of salespeople performance

Product management

- product development
- product elimination
- product policy, portfolio development, analysis and models

The marketing organisation

- basic organisational structures
- organisation of the marketing department
- product managers
- market managers
- account managers
- the impact of marketing on the organisational structure

International marketing

References

Enis, B.M. and Cox, K.K., Marketing Classics, 4th edn, Boston, Allyn and Bacon, 1981

BS344 Simulation

Prerequisite, BS241 Fundamentals of Operations Research or equivalent

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 interest. Applications will be drawn from the following areas:

Financial evaluation of alternative investments and their associated risk, inventory modelling, marketing evaluations, computer...
BS345 Quantitative Cases
Prerequisite, BS241 Fundamentals of Operations Research, or equivalent

This unit enables students to employ a multi-technique approach to problem-solving. As such it will provide them with the opportunity to fully integrate and apply their knowledge acquired in previous units. The unit will be based on three or four major case studies and is designed as a final unit for those students taking quantitative methods as a major area of study in their degree course. Extensive use will be made of computer facilities for problem-solving.

References
A detailed list of references will be made available throughout the unit.

BS404 Advanced Financial Accounting
Prerequisites, BS201 Corporate Accounting and BS300 Accounting Theory

This unit would be most relevant to students planning to enter (or already in) the employment fields of chartered accounting or financial accounting in industry.

Objectives
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
Advanced consolidations (complex group structures, progressive acquisitions, treatment of goodwill on consolidation, revaluations, disposal of subsidiaries, bonus issues, etc.), purchase pooling (evaluation of these two alternative methods of accounting for business combinations), joint ventures (accounting techniques proposed for this increasingly used form of business association), funds statements, human resource accounting, accounting for corporate social responsibility, reporting to employees, depreciation allocation theory, extractive industries, and accounting for foreign operations.

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

BS406 Advanced Taxation
Student, enrolled in this unit will be expected to have passed BS300 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 particular 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
- 5177 A and tax avoidance
- trusts, beneficiaries and children’s income
- superannuation funds
- primary producers and resource developers
- sales tax and state taxes
- future trends in taxation.

References
Income Tax Assessment Act (Latest edn)
Australian Income Tax Law and Practice Vols 1-10. Syd., Butterworths
COH Australia Australian Federal Tax Reports, Vols 1-6 CCH (Aust) Ltd
COH Australia Australian Tax Cases CCH (Aust) Ltd
Richardson, R.J. The Taxation of Corporations and Their Shareholders. 3rd edn, CCH (Aust) Ltd 1980

BS422 Commercial Programming C
Prerequisite, BS329 System Software A

This unit provides an introduction to relevant aspects of computer hardware and an introduction to programming in assembly language. These topics are included:
- Introduction to assembly language
  - What is assembly language? Why is it used.
  - Introduction to FACOM assembler

operations systems evaluation; corporate modelling; economic modelling

Preliminary reading
Jones, G.T. Simulation and Business Decisions, Harmondsworth, 1972
Assembler programming
How to link assembly language routines to COBOL programs.
Structured programming in assembly language.
Debugging techniques.
Substantial programming assignments will be undertaken, using assembler language.

Computer hardware
Introduction to hardware concepts.
Detailed description of CPU components, a comparison made in regard to these on various machines and the impact these differences have on systems and applications software.
Details of the input/output structure of computers again using comparisons between machines.
Discussion of the architectural differences between mainframes, minis and micros.
Discussion of microprocessor technology with regard to its present and future impact on the computer industry.
Introduction to the state of the art developments in the computer industry.
Brief discussion of the history of computing from a hardware point of view.

References

Graduate Diploma subjects

BS457 Introduction to Financial Management
Prequisites, 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 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;
the cost-volume-profit analysis and discounted cash flow analysis;
accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
the divisional performance evaluation and transfer pricing;
the budgeting and profit analysis.

References
Ma, R., and Mathews, R. The Accounting Framework. 1st edn, Melb., Cheshire, 1979

BS461 Economics
No prior knowledge of economics is assumed. Applicants who have mapped 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 prices/incomes policies.

References
Davies, J. and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1979
Indeks Economics, State of Play, Sydney, George Allen and Unwin, 1982
A detailed reading guide will be issued at the start of the semester.

BS463 Current Issues in Economics
Prequisite, 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, productivity bargaining, worker participation schemes.

References

BS552 Financial Structures and Policy
Prequisite, 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**

**BS571 Quantitative Methods in Finance**

The objective in this unit is to develop in students the ability to recognise the potential for the use of computing facilities, as well as the ability to apply a range of quantitative techniques, to the solution of problems in financial management.

Emphasis is on the development of practical approaches to problem solving. No new theoretical material is introduced; the approach is to draw extensively on problems and concepts raised earlier in the course and consider the extent to which quantitative and other computer-based techniques may be used in problem solution.

**Course outline**

Throughout each of the areas below consideration is given to the nature of the procedures, its common applications, and means of evaluation and selection of appropriate packages.

**Aids for financial calculation**

An examination of methods of performing common calculations in finance, e.g. I.R.R., N.P.V., trend analysis; consideration is given to desk-top calculators, computers and packages.

**Optimising procedures**

Linear, integer and dynamic programming and their application to investment analysis including project selection, portfolio management and financing decisions; consideration of means of achieving multiple objectives and goal programming including applications where goals are non-financial (e.g. social).

**Spread-sheet financial modelling**

Use of packages such as MAPS, FLARES II, FORSIGHT etc. as financial planning tools.

**Risk and uncertainty**

Extension of the above to cope with conditions of uncertainty including: sensitivity analysis; use of spread sheet packages such as I.F.P.S which utilise monte-carlo procedures to analyse risk conditions.

**Nature and role of simulation in planning under conditions of uncertainty.**

**References**

In addition to packages and the related manuals, journal articles and texts are used as reference material. While the unit is not planned to be developed around specific texts, reference is made to the following:

Weingartner, H.M. *Mathematical Programming and the Analysis of Capital Budgeting Problems*. Chicago, Markham, 1967

**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 lecturers’ role is to generate a situation in which current attitudes and practices are challenged, and alternative approaches to management are evaluated.

Theoretical models are applied to problems in order to permit impartial analysis of organisational issues.

Experience is also gained in co-operative group preparation of material and presentation to the class.

The application of some models allows the student to develop in students the ability to solve problems in the organisation of people.

The 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:

- analysis of organisational objectives
- analysis of organisational environments
- analysis of organisational decision systems
- information processing strategies
- choice of structural forms
- differentiation and integration
- conflict resolution
- design of rewards, restraints and controls
- management style
- hiring and development.

**Recommended reading**


**Textbooks**


**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 able to interpret psycho-social aspects of organisational better, and be equipped for the successful management of people.

the student becomes acquainted with current ideas of organisation theorists concerning communication, decision-making behaviour and organisation development;
the student is able to use these concepts to plan and evaluate management of 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 draw upon lecture-discussions, group experiential exercises, case-studies, tests, student presentations and films. These are complemented by extensive private reading and practical assignments out of class.

Topics include interpersonal communications, motivation, perception, leadership, teamwork, intra- and intergroup processes, conflict, management, organisation development. Seminars during the semester are an integral part of the course.

Textbook
Kelly, J., Organisational Behaviour, 3rd edn, Homewood, Ill., Irwin, 1980

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 accountants 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 and expenditure patterns, the buying process, market segmentation.

Product/Service policy -- lifestyle 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.

References

BS584 Marketing Administration 2

Prerequisite: BS583 Marketing Administration 1

An elective unit in the graduate diploma courses in accounting and management systems. 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.

References

BS585 Secretarial Practice and Procedure

This unit is intended to equip potential company secretaries for their future careers.

Topics covered include:
meetings and conferences, duties of chairman, organisation, standing orders, terms and expressions, etc;
board meetings: preparation, agenda and minutes, quorum, voting rights, powers of members' motions;
documentation, including annual return and registers. Various ways of raising finance. Winding-up procedures;
the Board and the Stock Market. Functions and procedures, listing requirements and terminology, voluntary and statutory controls, etc

References
The reading list is made available during the semester

BS586 Personnel and General Administration

A unit in the graduate diploma course in business -- 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.

References
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 given, preferably in the final semester of the course. Candidates must have completed all of group A units and preferably two of the group B units before commencing this one.

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

Introduction Business policy as a field of study; the managing director's job. As organisation leader, personal leader, architect of corporate purpose; determining corporate strategy. The concept of corporate strategy The organisation and its environment. The company and its building. The director's job. As organisation leader, personal leader, architect of corporate purpose; implementing corporate strategy. The accomplishment of purpose: process and behaviour. Managing the strategic process.

References

Texts include:


BS588 Administrative Policy

This unit 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 will be concerned with the development of corporate objectives and the translation of these objectives into strategic plans. Cases drawn from both business and government are used as well as discussions of prepared readings to help students learn how to employ strategy in selecting appropriate administrative policies and in securing their effective implementation.

References


BS589 Management, Organisations and People

This unit is taken in the course for the graduate diploma in accounting and management systems.

The course provides a macro-view of organisations as open systems examining the interfaces and interactions of environment, tasks, technology, structure and people. It then focuses on the organisational subsystem, studying individual, interpersonal, group and intergroup processes within the organisational context. The role of the manager in each of these contexts is a recurring and integrating theme. In particular, wherever possible learning is applied to the accounting and financial environments immediately relevant to students. They have the opportunity to contribute by sharing their current and past work experience as a source of material to enrich class activities. Experiential learning methods as well as lecture-discussion and case methods are employed.

Considerable supplementary reading is required outside class time. Assessment is progressive and may include essays, class presentations and/or tests.

Topics are chosen from: the nature of the organisation; the organisation as an open system; interactions between sub-systems and their implications for managers; organisation climate and effectiveness; organisation change and development; inter-group competition and co-operation; managing conflict; group dynamics and team building; group decision-making; synergy vs. groupthink; inter-personal processes and communication; the individual; leadership; motivation, behaviour change and modification; perception; learning; values; personality and individual differences; models of man — behavioural science views.

Students are continually encouraged to analyse newly-acquired knowledge to facilitate transfer to their own work situation.

BS594 Quantitative Methods

No formal prerequisites are specified beyond a previous knowledge of basic mathematics.

This unit in the graduate diploma administration course is designed to give students an understanding of the role of quantitative analysis in the decision-making process. The skills acquired are used in other units of the course as well as giving an appreciation of relatively new quantitative techniques with practical application. These include the use of packaged programs on computer terminals. The topics included are: analysis and presentation of data; significance testing; decision theory; forecasting (with emphasis on short-term models); simple linear programming; inventory management.

Recommended reading


Textbooks

None specified. During the course, references and other material are listed.

BS595 Marketing Management 1

Prerequisites, nil

The program introduces students to the role of marketing as part of the overall business function, and consists of a series of lectures dealing with the fundamentals of marketing, marketing planning and consumer behaviour.

Methods of instruction

Emphasis is shared between theoretical consideration and practical problems. Throughout the course students are expected to participate actively through the use of case studies and the presentation of group and individual assignments.

Course framework

Consumer behaviour — consumption and expenditure patterns, the buying process: market segmentation. Product/service policy — life cycle and adoption process, planning; differentiation, packaging and branding. Pricing policy — cost, demand, resources considerations; competition. The communications mix — advertising; promotion; personal selling. Distribution policy — channel selection; physical distribution. Introduction to marketing strategy.

References


BS596 Marketing Management 2

Prerequisites. BS583 Marketing Management 1 BS497 Quantitative Methods BS461 Economics

A second year subject in the Graduate Diploma in Business Administration.
This unit builds upon the knowledge that students have gained from Marketing Management 1, especially in respect to the marketing concept, the marketing planning process and the elements of the marketing mix.

The aim of this unit is to:
- introduce the student to the 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;
- 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;
- organising for marketing — implications of the environment, relationship with total organisation, basic organisational types.

**References**

Argenti, J, Corporate Planning. Lond., Nelson, 1974

**BS651 Current Issues in Accounting**

The unit covers current issues relevant to the accountant involving a study of exposure drafts, suggested reforms and theories, changes in government regulations and practices, developments in international and domestic public and private enterprise.

**References**

Detailed each session by the lecturer.

**BS652 Profit Planning and Control**

Prerequisites, nil

A unit in group A of the graduate diploma in accounting, which is concerned with analytically developing 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**

Anderson, D.R. et al, Practical Controllership. 3rd edn, Homewood, Ill., Irwin, 1973
Argenti, J, Systematic Corporate Planning. Lond., Nelson, 1974
Irwin, P.H., Business Planning — Key to Profit Growth. Hamilton, Ont., SIA Canada, 1969
Lewis, R.F., Planning and Control for Profit. 2nd edn, London, Heinemann, 1974
NAA Research Report 42, Long Range Profit Planning

**BS653 Auditing and EDP**

Prerequisites, Auditing or Accounting 3C/Auditing and Introduction to Data Processing, or suitable equivalents

The increasing dependence of all types of organisations on computer-based systems has brought about a need for new approaches to auditing. In this unit it is intended to acquaint people with some auditing computerised systems.

Topics covered include: revision of basic data processing principles; the audit role in systems development; the design functions and development of controls; processing and program controls; the computer audit trail; auditing packages; appraisal of control requirements in the various processing options e.g. bureaux, time-sharing etc.; auditing advanced systems e.g. on-line systems, data base etc.; internal control questionnaire for EDP.

The teaching method is by lectures, seminars and practical case work. A major case study is undertaken.

**References**

Specific articles and texts are referred to when completing each topic area.

**BS654 Contemporary Auditing**

Prerequisite, BS355 Accounting 3C — Auditing or equivalent

It is essential that students are familiar with the subject matter of BS355 Accounting 3C Auditng or BS304 Auditing as most seminars will include an examination in-depth of issues initially raised at the undergraduate level. The aim is to evaluate in a series of seminars, some of the more important contemporary issues facing the profession. This unit is most beneficial to students who have had some auditing experience.

Seminar topics are chosen from the following:

- an analysis of the attempts to postulate a conceptual framework of auditing, and the inherent problems and implications resulting from the promulgation of inductively determined standards that do not meet adequately the specific needs of the primary users of audited information;
- the importance of behavioural factors in auditing, with particular reference to Goldman and Barlev's behavioural model of independence, and an analysis of empiric research into behavioural patterns in internal audit relationships;
- contemporary attempts to solve some of the traditional problems of internal control evaluation by the use of Bayesian probability and positional analysis;
- the implications for the role and responsibilities of the profession resulting from the deliberations of the Metcalf, Cohen, Adams and Moss Committees;
- contemporary developments in the law of negligence, with particular reference to the decision of the New Zealand Court of Appeal in the case of Scott v. Group Ltd. v. McFarlane;
- the responsibility of the auditor in relation to 'post balance date events', with particular reference to the decision in Corporate Affairs Commission v. A. and T. Barton;
- the audit implications of current cost accounting;
- the epistemological implications of the traditional audit approaches to the collection and evaluation of evidence;
- the objectification of the materiality decision in auditing and accounting;
- the audit implications of computer-based accounting systems;
- the inherent problems of the concept of 'truth and fairness'; the responsibility of the auditor to detect fraud with particular reference to the Equity Funding Corporation case;
- an analysis of the ethics of the profession in the context of ethical theory;
- the role of the auditor in the context of 'efficient markets' and portfolio theory;
- the role of the auditor in relation to compliance with statute and the O.L.R. of the A.A.S.E.;
corporations

References
Detailed reading guides are 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 and proposals for reform of corporate taxation.

References
Australian Income Tax Assessment Act 1936 as amended
Australian Federal Tax Reporter, North Ryde, N.S.W., CCH Aust. Ltd.
Hodgins, J.E Sales Tax in Australia, Sydney, Butterworths, 1976
Richardson, R.S. The Taxation of Corporations and their Shareholders, 3rd edn, North Ryde, N.S.W., CCH Aust. Ltd., 1980
Taxation Aspects of Plant, Equipment and Buildings, North Ryde, N.S.W., CCH Aust. Ltd., 1974
Tax Essays Volume 1, Sydney, Butterworths, 1979
Understanding the New Investment Allowance, North Ryde, N.S.W., CCH Aust. Ltd., 1976

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, superannuation funds, contesting an income tax assessment, preventing the avoidance of income tax.

References
Australian Income Tax Assessment Act 1936 as amended
Australian Federal Tax Reporter, North Ryde, N.S.W., CCH Aust. Ltd.
Contesting an Income Tax Assessment, North Ryde, N.S.W., CCH Aust. Ltd., 1977
Marks, B., Alienation of Income, North Ryde, N.S.W., CCH Aust. Ltd., 1978

BS658 Quantitative Approaches to Financial Policy
Prerequisite, usually students would have completed an introduction to linear programming and capital budgeting at undergraduate level.

The object is to examine the use of financial models as a means of overcoming the problem of conventional investment analysis. Specifically the course includes an evaluation of conventional capital budgeting techniques with reference to multiple period investments, project interdependence, uncertainty and the inter-relationship between investment, financing and dividend decisions.

Modelling is studied as a solution to financial decision-making including the development of linear programming models and corporate models to take account of the above problems.

References
Detailed references are issued by lecturers

BS659 Investment Analysis
BS651 Current Issues in Accounting usually should have been completed prior to attempting this unit.

The course comprises four parts: accounting information and investment analysis, investment alternatives, capital markets, portfolio theory and practice.

Course content includes a review of types of, and markets for, securities; a consideration of techniques used by security analysts to assess and evaluate corporate financial performance; and a review of share valuation models. In the second part of the course, portfolio theory is developed and portfolio performance evaluated, together with consideration of current Australian practice.

Preliminary reading

References
Ball, R., Brown, P., Finn, F., Officer, R. Share Markets and Portfolio Theory, Bris., University of Queensland Press, 1980
Markowitz, H.M. Portfolio Selection, New Haven, Yale J., p., 1971

Textbook

BS662 Financial Institutions and Markets
Objectives
This unit is designed to introduce students to the structure functioning and developments of Australian financial institutions and to provide an appreciation of the environment in which they operate. The unit also provides an understanding of the nature and workings of the Australian monetary system and its management.

Course outline
Institutional environment
Nature and role of financial markets.
Nature and functions of various financial institutions
Surplus units and the source and flow of funds.
User requirements — non-finance industries.
User requirements — household sector.
The intermediate process.
Capital raising: markets for new and tradable securities.
Short term money markets: official and unofficial, inter-company loans, commercial bills.
Government loan raising: technique and impact.

Analytical framework
Determination of the level and structure of interest rates.
Transmission processes: asset price adjustments.
Invention in the market: targets and instruments; ‘captive market’ legislation; ‘accommodatory’ money policy.

References
Davis, K. and Lewis, M. Monetary Policy in Australia, Melbourne, Cheshire, 1980
Davis, C.P. Economics of the Financial Sector, Melbourne, Cheshire, 1972
Stanford, J.D. Money, Banking and Economic Activity, N.Y., Wiley, 1973
Committee of Inquiry into the Australian Financial System (Campbell Inquiry), Reports as available.

Preliminary reading
McKenna, J.P. Aggregate Economic Analysis, N.Y., Dryden Press, 1972

BS663 International Finance and Monetary Theory
Prerequisites, BS662 Financial Institutions and Markets should be completed or undertaken concurrently.

Objectives
This unit provides a rigorous study of issues relating to government policy. It is extended into modern monetary theory with international monetary considerations and international financial management.
Course outline
Macroeconomic analysis
Determination of national income, employment and prices in alternatively specified models;
a careful analysis of fiscal policy from its mechanics to its eventual impact on the open economy;
further analysis of monetary policy in an open economy;
qualifications to the efficacy of policy options
International finance
Review of concepts of international trade, balance of payments nature of foreign exchange markets;
adjustment mechanisms — market and by intervention;
development of spot and forward exchange markets.
International financial management
Introduction to the topic, Finance functions in overseas operations; governmental regulations affecting international business;
exchange rate risk and cover in foreign operations

References
Crouch, R.L. Macroeconomics, N.Y., Harcourt-Brace, 1972
Shaw, G.K. Macroeconomic Policy. Lond., Martin Robertson, 1972

BS672 Systems Analysis
Course objectives
The primary purpose of this unit is to develop an awareness of the suitability of systems analysis as a means of integrating a number of skills for problem-solving purposes.

After completing this unit, students should be able to:
understand how computer systems are developed;
determine user requirements for information;
document these requirements;
determine the appropriate level of systems controls;
specify alternative methods for solving the problem.

No prior systems knowledge is assumed, however students are strongly advised to undertake some preliminary reading.

Course structure
Introduction to systems analysis: systems investigation and documentation, presentation — both written and verbal; input and output design: systems controls; selection and evaluation of systems projects: equipment and processing alternatives; implementation, post-implementation and computer centre review; case study.

References

BS674 Current Issues in Systems 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.

Usually candidates will have completed successfully BS673. Commercial Systems Design prior to attempting this unit.

Course structure
Developments in computer hardware, and the changing role of design for performance,
telecommunications technology and today’s network architectures: network design techniques;
improving the person-computer interface: computer psychology and modern dialogue design;
data base architectures, and evaluating data base management systems,
canonical data structures: the design of stable data bases;
the elements of data base administration: tools and techniques; future directions: creative systems design.

References
In addition to numerous periodicals and journals, the following texts will serve as a guide:

BS673 Commercial Systems Design
Course objectives
After completing this unit, students should be able to:
specify an appropriate hardware configuration for a given systems requirement specification;
design all aspects of a batch-processing system and understand the limitations of this approach;
specify the gross design consideration for on-line systems.

No prior systems knowledge is assumed, however students are strongly advised to undertake some preliminary reading.

Course structure
The physical design of computer subsystems: delineating man-machine responsibilities: design of information presentation;
data capture and transmission; documentation techniques and standards; security and controls.

References
Jancura, E. Audit and Control of Computer Systems. N.Y., Petrocelli/Charter, 1974
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 projects; project proposal and promotion; proposal evaluation; project methodology and control; methods for achieving optimum productivity in systems development; the implications of changing systems; implementation of systems projects.

References
- Fried, L. Practical Data Processing Management. Reston, VA, Reston Publ, 1979

BS676 Operations Management

Course objectives
After completing this unit, students will be able to:
- plan and control the use of data processing resources;
- select, justify, and choose appropriate methods of acquiring data equipment, computer equipment, and personnel;
- manage, within the operations environment, the introduction of new projects;
- appreciate the operations management role.

No formal prerequisites are specified. However, it is assumed that candidates have a prior knowledge of administrative theory and practice of computer systems.

Course structure
The final selection of topics is made from the following depending on the students' interests and prior knowledge: the role of operations manager; resource scheduling; computer centre control; data entry; equipment selection; planning principles; behavioural issues.

References
- Brandon, D.H. Data Processing Organization and Manpower Planning. N.Y., Petrocelli, 1974
- Fried, L. Practical Data Processing Management. Virginia, Reston, 1979

BS677 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 information 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; technical considerations; social considerations.

References
- No single book covers the full scope of the course. The texts to be used as references will include:

BS678 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 integration 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.

Course structure
Each student undertakes an individual project which is based on an actual commercial system, usually in the student's own work environment. The student initially submits a written proposal giving preliminary details of the project. If the proposal is approved in principle a supervisor is appointed who contacts the organisation concerned to ensure its support for the project and to determine that it is both meaningful and feasible.

The types of project likely to be approved vary substantially in content. They can be drawn from any area in the course which would enable the student to apply knowledge gained under the guidance of a supervisor.

The supervisor is responsible in making sure that the student does not deviate too far from the original objectives specified for the study.

The student should submit a written report on the project study. This report should include: a definition of the problem; an appraisal of the work undertaken; a description and specification of the proposed solution to the problem; an evaluation of the proposed system.

This written presentation is supported by an oral presentation of the major factors associated with the project.
The project is assessed under several broad categories including: the student's initiative and industry during the period of the project's study; the student's understanding of the project and its related background; the content and presentation of the final report; the degree of acceptability of the proposed system.

**BS679 Computer Security and Control**

Prerequisite: BS304 Auditing and BS121 Introduction to Data Processing or suitable equivalents

The increasing dependence of all types of organisations on computer-based systems has brought about a need for systems reliability. This unit is intended to assist users of computer systems to ensure that their results are obtained efficiently, with minimum risk and that any potential risk may be identified.

Topics covered include:
- data processing principles and methodology;
- file storage — concepts, methods and controls;
- processing controls for batch and on-line systems;
- controls associated with centralised, decentralised, distributed and network systems;
- risk identification, analysis and control;
- auditing of the systems development;
- disaster planning and recovery;
- physical security and access restriction;
- documentation — users, systems, audit;
- the roles of the internal and external auditor.

The teaching method is by lectures, seminars and practical case work. Group and individual assignments complement the in-class sessions.

**References**


Parker, D Crime by Computer. N.Y., C. Scribener and Sons, 1976


**BS681 The Organisation**

A first-year subject in the graduate diploma course in organisation behaviour.

The subject is concerned with:
- a 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.

**Textbooks**


**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**

**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; 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.

**Textbook**


**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, Sid inspect duty and security practices are canvassed where relevant.
- Legal aspects of financial markets
- The legal nature of the stock exchange and the legal basis of its controls on trading and fund-raising;
- the nature and operation of the short-term money market and the Sydney Futures Exchange;
- statutory controls over misfeasance in finance markets, including an examination of wider jurisdiction and administrative/legislative issues consequent upon the formation of the National Companies and Securities Commission.
Taxation and finance
An analysis of the present basis for taxing financial transactions and financial corporations;
a review of proposed taxation reforms regarding the taxation of financial transactions and corporations.

References
Taxation Review Committee Full Report, 31/1/75 AGPS, Canberra, 1975
Taxation Aspects of the Campbell Committee, CCH Aust. Ltd. Syd., 1982

AT693 Psychology and Interpersonal Skills
This subject is designed for students taking the graduate diploma course in organisation behaviour.

The intention is:
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.

Syndicates will present a seminar on agreed topics; each student will then submit a paper on their individual section of the presentation. There is no written examination.

References
Reading and other resources are given where appropriate.

BS752 Corporate Financial Management 1

Objectives
To develop a framework of corporate strategy including:
an 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.

References
Myers, S. Modern Developments in Financial Management. N.Y., Praeger, 1976

BS753 Corporate Financial Management 2

Prerequisite, students enrolled in this unit are expected to have passed BS752 Corporate Financial Management 1.

Objectives
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:
External evaluation
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 insolvency.
Applications of Company 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.

BS751 Research Paper

This is a component of the graduate diploma course in accounting

The object 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, B.R. ed. Research Methodology in Accounting. Lawrence, Kansas Scholars Book Co., 1972


References

BS754  Investment Management

Prerequisites, no formal prerequisites are specified. Candidates usually would have completed the first year of the course.

Objectives
To acquaint the student with the various securities and funds available for corporate investment;

to introduce the use of financial and other information in the evaluation of alternative investment media;

to consider the selection of an appropriate investment portfolio and the management of that portfolio.

References
Ball, R., Brown, R., Finn, F. and Officer, R. Share Market — Portfolio Theory. Q.U.P., 1980
Calder, S., Lindsay, P. and Koch, D. Futures Stork. Melbourne, Horwitz Grahame, 1980
Elton, E.J. and Gruber, M. J. Portfolio Theory: 25 Years Later. Amsterdam, New Holland


BS755  Research Project

Prerequisites, usually students would have completed the first four units of the course before commencing the research project.

Objective
To enable students to apply the concepts and techniques studied during the course to a substantial practical problem in corporate finance.

Specifically, students are required to show they have the ability to define a corporate finance problem clearly, select and apply appropriate methodology to solve it and present a clear and concise written report on the work undertaken.

Course program
This unit is conducted over two semesters. While the work is carried out by students it is done to a set program under the supervision of staff.

Seminars are run at the beginning of the semester. They cover the following topics:

- the objectives of the research project;
- the selection of an appropriate project;
- the selection of suitable methodology for different types of projects;
- organisation and standard of report expected.

Written proposals for projects are submitted by March 31. These must include sufficient details for staff to assess the usefulness and feasibility of a project.

Proposals are then approved and supervisions appointed as soon as possible after submission, but in any case not later than April 30.

Students are required to report on at least a monthly basis to supervisors and to submit drafts of all work undertaken prior to the presentation of the final written report which must be presented for assessment by October 31.

References
No specific references are required for a unit of this nature. General references on report writing will be used, such as Anderson, J. et al. Thesis and Assignment Writing. Sydney, Wiley, 1970.
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Part-time
S.D. Aldous, BA, BComm, LLB
A. Bodman, MSc, MEng, CEng, MIProdE, AMBIM
P. Brandon, GradDiplEng, CertProdEng
L. Nevile, BBlus, LLB
K. Perkin, BBus, AASA
R. Watson, MIIE

Department of Mechanical Engineering

Head
Vacant

Principal Lecturer
I.J. Freshwater, PhD, MEngSc, BE(Mech), AGInstTech, MIAusE
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 within these departments are as follows:

Department of Civil Engineering

Degree of Master of Engineering
*Degree of Bachelor of Engineering (Civil)
Graduate Diploma in Civil Engineering
Graduate Diploma in Civil Engineering Construction
Graduate Diploma in Transportation Systems
Graduate Diploma in Urban Systems
*Diploma of Building Surveying

Department of Electrical and Electronic Engineering

Degree of Master of Engineering
*Degree of Bachelor of Engineering (Electrical)
Graduate Diploma in Digital Electronics
Graduate Diploma in Energy Systems
Graduate Diploma in Telecommunication Systems
Management

Department of Manufacturing Engineering

Degree of Master of Engineering
*Degree of Bachelor of Engineering (Manufacturing)
Graduate Diploma in Biochemical Engineering
Graduate Diploma in Chemical Engineering
Graduate Diploma in Industrial Management
Graduate Diploma in Manufacturing Technology
*Associate Diploma in Production Engineering

Department of Mechanical Engineering

Degree of Master of Engineering
*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 work experience.
†This is a para-professional course.

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 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

A feature of Swinburne engineering degree courses is their four-and-a-half 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 paid work experience is arranged by Swinburne and undertaken in two semesters, each of six months, during the third and fourth 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.

Students who undertake cooperative education courses derive many benefits. Some of these are:

(a) research shows that a student’s academic performance is enhanced following work experience.
(b) students receive recognised rates of pay for the twelve months’ work experience.
(c) students can sample particular areas of their chosen branch of engineering before graduation.
(d) students work on real engineering problems in industry.
(e) on completion of the course the young engineer’s employment opportunities are enhanced because of previous industrial experience and availability at mid-year when job opportunities exist.

The cooperative format is also used for the Diploma of Building Surveying.

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
Austral Standard Cables Pty Ltd
Australian General Electric (Appliances) Ltd
Australian Glass Manufacturers Co
Australian Iron & Steel Pty Ltd
Australian Portland Cement Ltd
Autonomous Energy Systems
Barix Controls Pty Ltd
B.X. Plastics (Aust) Pty Ltd
Brownbuilt Ltd
CFM Aluminium Fabricators
CIC Ltd
CSIRO
Carlton & United Breweries Ltd
City of Box Hill
Brighton
Camberwell
Doncaster & Templestowe
Hawthorn
Heidelberg
Knox
Malvern
Nunawading
Ringwood
St Kilda
Waverley
Clark Rubber
G.J. Coles
Comfort Filling and Engineering Edn Berhad
Commonwealth Aircraft Corporation
Consorpliely Pty Ltd
Consolidated Electronic Industries Pty Ltd
Containers Ltd
Country Roads Board
Cyclone KM Products Pty Ltd
Dunlopware Pty Ltd
Dandenong Valley Authority
W.A. Drutshere Pty Ltd
Department of Construction
Department of Defence
Department of Industry and Commerce
Department of Transport
Department of Works
Dorf Industries Pty Ltd
Durlop 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
RS Industries
PE. Frye Pty Ltd
CBS Hard Metal Co
J. Gadson Pty Ltd
C Gardner & Naylor Pty Ltd
General Motors-Holden Pty Ltd
Government Aircraft Factory
Cuttridge Haskins & Davey Pty Ltd
Holeproof Ltd
Housing Commission of Victoria
ICI Australia Ltd
Ingersoll-Rand (Aust) Ltd
Insulwool Products
International Harvester Co of Aust Pty Ltd
Irwell Pty Ltd
James Miller Holdings Ltd
John Connell & Assoc
K. & G. Johnston Pty Ltd
Robert Jones Engineering Pty Ltd
Kernphorne Lighting Co
C. Kennon & Co Pty Ltd
Keogh Wood and Partners Pty Ltd
Kinnaird Hill DeRohan & Young
Kraft Foods Ltd
Krew Trading Co
L & L Printed Art
David Linacre Pty Ltd
Malaysia International Consultants
McPhersons Ltd
— Machine Tool Division
— Engineering Research Department
McConnell Dowell Constructors Ltd
Master Steel Pty Ltd
Melbourne Harbour Trust
Melbourne and Metropolitan Board of Works
Melbourne and Metropolitan Tramways Board
McI & Insulating Supplies Co Pty Ltd
Mobil Oil Aust Ltd
Moran Upholstery
Motorola Communications
Mytona Road Ltd
Neta Industries
Nissan Motor Co (Aust) Pty Ltd
Noel M. Heather and Co Pty Ltd
Nylex Corporation Ltd
Ogden Industries Pty Ltd
P.B.R Industrial Co Pty Ltd
Philip Morris Ltd
K.G. Pizzey Pty Ltd
Pladis Industries
Premware 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 Bearings Co Ltd
— Comcork Manufacturing Co
— Repco Lorimier
Reva Plastics Pty Ltd
Reynolds Tanning Co Pty Ltd
Reyrolle Ltd
Rheem Aust Ltd
Robert Bouch (Aust) Pty Ltd
Robert H. Grant Pty Ltd
RoCo Industries Ltd
John Scroggie Pty Ltd
Scientific Electronics Pty Ltd
Scott & Furphy Engineers Pty Ltd
Selectronic Components
Shell Company of Australia Ltd
Shire of Eltham
Healesville
Siddons Industries Ltd
Silentbloc (Aust) Pty Ltd
Sperry New Holland
State Electricity Commission of Victoria
State Rivers and Water Supply Commission
Strand Electric (Aust) Pty Ltd
Sutton Tools Pty Ltd
Telecom Australia (Victoria Division)
The Stanley Works Pty Ltd
W.C. Stevens (Vic) Pty Ltd
Unibrak (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
Zenford Pty Ltd
engineering degree courses

SWINBURNE INSTITUTE OF TECHNOLOGY

FORM 5

YEAR 1

YEAR 2

YEAR 3

YEAR 4

YEAR 5

half year only

Elective studies

POSTGRADUATE COURSES

YEAR 1

YEAR 2

MUNICIPAL CONSTRUCTION
HYDRAULICS STRUCTURES TRANSPORT

ELECTRICAL POWER

ELECTRONICS

ELECTRONIC ENGINEERING

ENGINEERING ELECTRONICS

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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. Elective studies in civil, electrical and electronic, manufacturing and mechanical engineering provide students with an opportunity to develop their interest in the branch of engineering in which they propose to specialise.

Another feature of all degree courses is their four-and-a-half (nine semester) cooperative education format. The program consists of seven semesters of academic tuition in the institute plus two semesters of work 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 to degree courses is contained in the sections entitled ‘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 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.

Associate Diploma in Production Engineering
There are no prerequisite subjects for entry to the associate diploma course in production engineering other than satisfactory completion of year 12. It is recommended that students have passed at least one subject from the areas of mathematics and the physical sciences.

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 (sixth form) 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.

Entrance requirements
Applicants seeking standard entry to the first year of an engineering degree course should note that the entrance requirements are as set out below.

For students undertaking a year 12 course of study accredited by the Victorian Institute of Secondary Education (VISE), the prerequisite course of study is the following group of 1 subjects: English, Pure Mathematics, Applied Mathematics, Physics and Chemistry. Within the Pure and Applied Mathematics subjects, optional Unit C — Complex Numbers and Matrices, is strongly recommended.

In addition, results of grade D or higher in at least four of the above subjects are required to satisfy the entrance requirements.

Applicants who have undertaken a course other than a VISE year 12 course of study, such as a Tertiary Orientation Program or courses of study undertaken outside Victoria, are admitted on the basis of equivalent subject content and standard achieved.

Applicants who have not completed the above requirements may be admitted following satisfactory completion of the Australian Scholastic Aptitude Test.

Applicants who complete the science/engineering course satisfactorily in the Tertiary Orientation Program offered by the Swinburne Technical College will be given preferred entry to the first year without quota restrictions. This course comprises English, chemistry, physics, science/engineering mathematics, and concepts of mathematics. Applicants who have studied other Tertiary Orientation Program subjects at Swinburne will be considered for entry on their merits.
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, 3025. The closing date for applications is approximately the end of October in the year of application.

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
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.

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 1983 may apply for deferment until 1984. 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 with advanced standing

A student who has successfully completed, or partly completed, an acceptable post-secondary course may be admitted with advanced standing to an engineering course at Swinburne. The policy of the Engineering Faculty Board with regard to admission with advanced standing is set out in the following regulations:

1 General
1.1 The Faculty Board believes that in general students who have completed satisfactorily, part of an engineering course at another tertiary institution in Victoria, or another comparable course, should receive credits for an equivalent part of the course for which they are enrolled at Swinburne.

1.2 In the consideration of applications for credit the following principles will be applied by the Board:

(a) A student should be brought on to a standard course as soon as possible after entry into the institute.

(b) Students should not undertake subjects in advance of the semester in which they will enter the standard course.

(c) Students who have passed a particular level of a similar course at a different institution may be admitted to the standard course at the next successive year's level, either with or without small amounts of additional course work being required.

(d) Consideration should be given to the intention of a series 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.

2 Application

2.1 In applying this policy the Board will follow these guidelines:

(a) Except in extraordinary circumstances credits are only approved at the beginning of a course of study.

(b) Credits are to apply only to a specified course of study at the institute.

(c) A credit shall be valid for a particular course and syllabus and only for the duration of such course or syllabus.

(d) In order to qualify for an award in the Faculty of Engineering a student must complete as a minimum, an equivalent full-time year in the Faculty.

2.2 In order to request credit, students entering a course will be required to do as follows:

(a) Register their intention to seek admission with advanced standing at the time of first enrolment.

(b) Lodge supporting documentation with their department within six months of registering their intention.
Course requirements

Class time-tables
The syllabus for each of the engineering courses may be found in 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 (1980 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) In first year, students are given the opportunity to choose one subject from the four technical electives available in the course areas of civil, electrical and electronic, manufacturing, and mechanical engineering. These subjects of thirty hours each are taught in the second semester and are intended to enable students to develop their interest in the various branches of engineering. Students should note that a particular technical elective is not a prerequisite for entry to the second-year course in the directly related branch of engineering. For example, a student who does not take the civil engineering elective but passes first year, can proceed to the second year of a civil engineering course without carrying an additional subject.

(b) All degree courses include provision for two general elective subjects in a non-scientific/technical area to be taken in later years. General electives of forty-five hours each are chosen from nominated Liberal Studies subjects or other approved subjects from the Faculties of Arts or Business.

A list of approved subjects will be published at the start of each year. Students wishing to take a subject that is not included in the list 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 time-table without difficulty.

The two general elective subjects are compulsory for all degree students.

(c) 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 requirements 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 full-time courses spread over both semesters, for example common first year engineering degree, should note that mid-year progress results are displayed on faculty and departmental notice-boards by the end of the first week of second semester.

For 1980 syllabus degree courses, 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 tests/examinations in the seventeenth and eighteenth weeks.

The specific weeks devoted to these activities in 1984 are given in the Swinburne calendar at the back 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 or four hours whichever is the lower.

(Students should also refer to the section entitled ‘Regulations concerning assessment’ in the general section of this handbook.)
Passing by years

1 General
The Engineering Faculty Board operates a scheme of block passing by years which enables an engineering student to be assessed on a block of work rather than individual subjects. The scheme applies to the following students:

(a) All full-time undergraduate students in cooperative courses.
(b) All part-time undergraduate students whose weekly workload is ten or more contact hours.
(c) Graduate diploma students who satisfy the above requirement for part-time students.

Students who have a workload in excess of fourteen hours per week 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 block passing rules.

2 Part-time students
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.

3 Full-time students
The Engineering Faculty Board system operates for full-time students as follows:

(a) A student in any year will 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.

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 block passing will apply. Such special programs require ratification by the Faculty Board.

5 Formula for faculty passing
(a) The following assessment categories will be used in preparing results for submission to the Board:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Range of Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>9</td>
<td>95 - 100</td>
</tr>
<tr>
<td>D</td>
<td>8</td>
<td>75 - 84</td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>65 - 74</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
<td>55 - 64</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
<td>50 - 54</td>
</tr>
</tbody>
</table>

where A is aggregate rating,
\[ A = \sum n_i z_i - 5 \sum n_i \]

\( n_i \) is the number of hours in the \( i \)th subject,
\( z_i \) is the rating in the \( i \)th subject.

The rating/category relationship will be as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Rating</th>
<th>Range of Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>N*</td>
<td>4</td>
<td>0 - 49</td>
</tr>
<tr>
<td>N</td>
<td>1</td>
<td>0 - 49</td>
</tr>
</tbody>
</table>

these percentages marks are to be regarded as a rough guide only.

6 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.

7 Faculty results
Students who have a workload which qualifies them for consideration under the passing by years 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' code. For undergraduate courses, codes are as follows:

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Undergraduate degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td>FX982 First-year degree (FIT and PIT)</td>
</tr>
<tr>
<td></td>
<td>FC984 Second-year degree</td>
</tr>
<tr>
<td></td>
<td>FC986 Third-year degree</td>
</tr>
<tr>
<td></td>
<td>FC988 Fourth-year degree</td>
</tr>
<tr>
<td></td>
<td>FC989 Fifth-year degree</td>
</tr>
<tr>
<td></td>
<td>FC992 Part-time degree — later years</td>
</tr>
<tr>
<td>Electrical and Electronic Engineering</td>
<td>FX982 First-year degree (FIT and PIT)</td>
</tr>
<tr>
<td></td>
<td>FE984 Second-year degree</td>
</tr>
<tr>
<td></td>
<td>FE986 Third-year degree</td>
</tr>
<tr>
<td></td>
<td>FE988 Fourth-year degree</td>
</tr>
<tr>
<td></td>
<td>FE989 Fifth-year degree</td>
</tr>
<tr>
<td></td>
<td>FE992 Part-time degree — later years</td>
</tr>
</tbody>
</table>
Cooperative education requirements

The policy of the Engineering Faculty Board is that all full-time undergraduate degree courses in engineering should be cooperative in format as defined in the following six parameters:

(a) The work experience amounts to at least twelve months in the total program.

(b) Swinburne is responsible for placing the students at work, for supervising the work experience and for all liaison with the employer.

(c) The work experience does not commence later than the third year of a course which would require four years of study in the traditional full-time format.

(d) The final period in the course is at Swinburne.

(e) For the work experience, the students are paid a salary commensurate with their qualifications and the duties entailed.

(f) The programs are such that a variety of industries may participate.

With the introduction of revised degree programs in 1980 all courses comply with the above parameters.

The revised programs are structured in the four-and-a-half year (nine semester) cooperative education format which consists of seven semesters of academic tuition in the institute plus two semesters of work experience.

Periods of paid work experience are an integral part of undergraduate degree courses in engineering. The work carried out by students during semesters of work experience is assessed. Satisfactory completion of a work experience session is a prerequisite for entry to the next academic stage of a course.

Further information relating to cooperative education courses is given in the booklet entitled Guidelines for Cooperative Education which is available from the Information Office.

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 superseded subject equivalents is available from the head of the student's department.

(e) As students will realise, there is often benefit in transferring from the course of study in operation at the time of enrolment to a later course of study. With the permission of the head of the student's departments, 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.

Suspension from courses

Full-time

A full-time student who has not achieved a pass in all subjects (a pass outright), or has not been passed by the Faculty Board on the year as a whole (a 'Faculty Pass'), may be permitted to repeat the year's work as a full-time student only once. A second repeat (that is, a third attempt) is not permitted.

A student may be permitted to repeat a full year's work as a full-time student only once during his or her course. That is, a repeat of any full-time year is not permitted if a student has repeated a full-time year earlier in his or her course.

Part-time

A part-time student who in any academic semester has not passed in all subjects in which he/she was enrolled, or who was eligible for a 'Faculty Pass' and did not achieve it, may be permitted to repeat any failed subject only once.

Normally a second repeat in any subject (that is, a third attempt) is not permitted.

Notes

A student who transfers from full-time to part-time study, or vice-versa, is considered under the regulations applying to his or her new enrolment category.

Decisions relating to exclusion from further study will in most cases, be made by the Engineering Courses Committee.
Enrolment

Although the Swinburne calendar is divided into two teaching semesters, engineering students need enrol only once for the subjects they are undertaking in any one year. Where it is necessary to change the list of subjects entered for at enrolment a student must complete an Amendment to course or subjects form available from student records, the engineering faculty office, or engineering department offices. Students should note that they must obtain the approval of the head of their awarding department before amending their enrolment. Applicants offered a place in an engineering course will be expected to attend for enrolment early in February. Successful applicants will be notified of enrolment times when they are offered a place.

Continuing students in engineering courses, and applicants holding a deferred place are required to present for enrolment during the times which are set aside for re-enrolling students in February. Details will be posted on institute notice-boards later in second semester. Deferees and students granted 'Leave of Absence' will be notified in writing.

Re-enrolling students who commenced a full-time degree course prior to 1980 should note that revised degree programs will be introduced gradually. In some departments continuing students will be given an opportunity to transfer from their original course to the revised program. Enquiries regarding courses to be followed should be directed to the head of department.

For further information regarding enrolment see the section entitled ‘Enrolment regulations’ in the general section of this handbook.

Approval and publication of results

1 General

(a) The Engineering Faculty Board believes that all engineering students should be informed of their progress as soon as possible after any prescribed subject has been completed.

(b) Final results for first semester subjects may differ from provisional results as a consequence of a student’s performance in a corresponding second semester subject.

(c) The only grounds for deferral of subject results are medical grounds or other reasons of hardship as determined by the Faculty Board from time to time. Deferral of faculty results for supplementary assessment is covered under existing regulations (refer to ‘Passing by examination’).

2 Students undertaking academic programs in both semesters

(a) Official results are approved by the Board for publication by the Registrar's Department as soon as possible after students have completed the academic program for the year.

(b) Students are notified by the awarding department of provisional subject results (using approved institute assessment categories and examination numbers) for first semester no later than the end of the first week of second semester.

(c) Provisional subject results are initially released by the awarding department. Following the release of provisional subject results, awarding departments notify teaching departments of the subjects for which results have been made available. Teaching departments are then free to release results if they wish (in the same form as specified in paragraph 2 (b)) for the subjects concerned.

(d) Where a student receives a provisional result of fail in a ‘stand alone’ first-semester subject in which assessment is completed at mid-year and the subject concerned is available in second semester, the student may, with the approval of the head of the awarding department, re-enrol for the subject in second semester. Where re-enrolment takes place, the student’s record for the year will show two results for the subject concerned.

3 Students undertaking cooperative education programs

(a) Subject results are approved by the Board for publication by the Registrar's Department as soon as possible after the completion of first semester. A student's Faculty result will be determined at the end of second semester when results for the year's work are known, except for those students covered under paragraph 4 (a).

(b) Where a student fails a subject at the end of first semester but is allowed to undertake a period of work experience during second semester, the student may be required to re-enroll for the failed subject in second semester.

In cases such as this, the student's record for the year should show two results for the subject concerned. (In accordance with the Board's policy of upgrading results, the lower of the two grades will be ignored in applying the formula for faculty passing.)

4 Students completing courses of study before the end of the academic year

(a) Final-year results for students in cooperative courses are approved for publication by the Registrar’s Department, as soon as possible after the end of first semester.

(b) Results for students who have completed outstanding subjects for an award at the end of first semester are approved for publication by the Registrar’s Department, as soon as possible after the end of first semester.

Awarding of degrees with distinction

Each year the Engineering Faculty Board selects students to be nominated for a degree with distinction. The Board expects results at about the Higher Distinction level in major areas of study, with particular attention being given to performance in the last two academic semesters of the course.

In addition to considering the result categories received by students in the final two academic semesters, a subjective assessment of students in relation to their contemporaries and to absolute standards is made.
Prizes, scholarships and awards
A complete list of the sources of financial support and the various awards available to students is given in the general section of this handbook. Brief information on awards most likely to be of interest to engineering students is given below. Further details may be obtained from the careers information library of the Student Health and Welfare Unit.

WP. Brown medal
This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course. The award is a medal and a premium of $100.

F.W. Green memorial prize
Books to the value of $50 are awarded to the most outstanding final year engineering student graduating each year.

Molyneux medal
A silver medal and a prize of $30 are awarded to the student in the final year of the Diploma of Chemical Engineering who presents the best process design thesis.

James Smith memorial prize
Books to the value of approximately $50 are awarded to the best student in structural design in the final year of the civil engineering degree course.

Harold E.R. Steele prize
This is awarded to the best student in the course leading to the degree of Bachelor of Engineering with major studies in electrical and electronic engineering.

Society of Chemical Industry of Victoria prize
A certificate and a prize of $25 is awarded to the student nominated by the Department of Manufacturing Engineering as the best student in the final year of chemical engineering.

Oscar Weigel exhibitions in engineering
Applicants for these awards must be qualified to enter the second or a later year of an engineering degree course or be accepted as a candidate for the degree of Master. Value — up to $400 per year and tenable for a period not exceeding five years.

Unilever prize
This includes provision for an award of $25 to be made to a mechanical engineering student.

Postgraduate awards
The Commonwealth Department of Education provides awards for full-time research leading to the degree of Master. The closing date for applications is 31 October in any year.

Professional recognition of courses
Institution of Engineers, Australia
The courses for degree of Bachelor of Engineering, in civil, electrical and electronic, manufacturing, and mechanical engineering, have all received recognition from the Institution of Engineers, Australia, as satisfying academic requirements for corporate membership.

Students who are enrolled for engineering courses at Swinburne and are at least seventeen years of age may apply to the Institution of Engineers, Australia, to become student members. Application forms are available from engineering departmental offices and the engineering faculty office.

Other professional bodies
The course for the Bachelor of Engineering (Manufacturing) is recognised by the Institution of Production Engineers and the degree in electrical/electronic engineering is recognised by the Institution of Radio and Electronics Engineers (Australia) as sufficient academic qualification for membership.

Short courses
In addition to the accredited courses leading to diploma and degree qualifications the engineering faculty also offers a wide range of short courses. These are usually of two to three days' duration and are designed to enable various industrial personnel to update their skills and knowledge in areas of specific interest. Typical courses offered recently include:

- acoustics
- antennas
- digital techniques
- human factors
- engineering
- metrology
- machining technology
- micro-processors
- residential raft slab design
- network analysis
- construction planning

Further enquiries should be directed to heads of engineering departments.
Department of Civil Engineering

The department offers a range of tertiary courses in civil engineering, including a cooperative degree, four graduate diplomas and the degree of Master by research. The department also conducts a cooperative diploma 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 courses enable graduate engineers to undertake further specialised studies in major areas of civil engineering and urban planning. The degree of Master provides specialist research training in particular aspects. Continuing education courses for professional engineers are provided from time to time in selected subjects. 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 for the Swinburne Applied Research and Development Division. Staff members are available for consultation individually or as members of a team on group projects. Enquiries should be directed to the head of the department or to the Industrial Liaison Officer.

Courses offered

Degree of Bachelor of Engineering (Civil)
Diploma of Building Surveying
Graduate Diploma in Civil Engineering Construction
Graduate Diploma in Civil Engineering
Graduate Diploma in Transportation Systems
Graduate Diploma in Urban Systems
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 four years of suitable professional experience.

Swinburne civil engineering graduates have excellent career prospects because employers want graduates with experience and this is provided as part of the cooperative degree program.

They 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.

Degree of 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 the 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. This cooperative employment is arranged by Swinburne and students receive a salary approximately two-thirds of that of a graduate engineer. Students benefit greatly from this first-hand industrial experience and consistent liaison is maintained between mentor, employer and student.

The fifth year, which consists of only one semester, is spent at Swinburne.

**Course structure (1980 syllabus)**

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours year</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT194</td>
<td>Thinking and Communicating 60</td>
</tr>
<tr>
<td>CE111</td>
<td>Applied Mechanics 90</td>
</tr>
<tr>
<td>EE183</td>
<td>Electrical Circuits and Devices 60</td>
</tr>
<tr>
<td>ME125</td>
<td>Thermodynamics and Heat Transfer 60</td>
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<td>MP101</td>
<td>Engineering Drawing 90</td>
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<td>MP102</td>
<td>Engineering Practices and Processes 60</td>
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<td>SCI194</td>
<td>Chemistry 90</td>
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<td>SK194</td>
<td>Computations 30</td>
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<tr>
<td>SM194</td>
<td>Engineering Mathematics 90</td>
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<td>SP194</td>
<td>Physics 90</td>
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<tr>
<td>CE101</td>
<td>Civil Engineering -- Structures 30</td>
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<tr>
<td>EE186</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>ME185</td>
<td>Mechanical Engineering Systems</td>
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<tr>
<td>MP191</td>
<td>Manufacturing Engineering</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE111</td>
<td>Structural Mechanics 90</td>
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<td>CE231</td>
<td>Hydraulics 90</td>
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<td>CE241</td>
<td>Surveying 120</td>
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<td>CE251</td>
<td>Structural Design 120</td>
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<tr>
<td>CE261</td>
<td>Transport Engineering 45</td>
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<tr>
<td>CE281</td>
<td>Geoscience 90</td>
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<tr>
<td>MP292</td>
<td>Engineering Materials 30</td>
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<tr>
<td>SM292</td>
<td>Engineering Mathematics 120</td>
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<tr>
<td>* General Elective 45</td>
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<table>
<thead>
<tr>
<th>Third year</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>CE391</td>
<td>Industrial Experience 24 weeks</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
</tr>
<tr>
<td>CE311</td>
<td>Structural Mechanics 45</td>
</tr>
<tr>
<td>CE331</td>
<td>Water Engineering 45</td>
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<td>CE341</td>
<td>Surveying 75</td>
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<td>CE351</td>
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<td>Computer Programming 15</td>
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<td>SM392</td>
<td>Engineering Mathematics 45</td>
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<table>
<thead>
<tr>
<th>Fourth year</th>
<th>Hours semester</th>
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<td>Semester 1</td>
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<tr>
<td>CE411</td>
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<td>Engineering Mathematics 45</td>
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<tr>
<td>* General Elective 45</td>
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<td></td>
<td>375</td>
</tr>
</tbody>
</table>

| Semester 2  | |
| CE491       | Industrial Experience 24 weeks |
| CE501       | Investigation Project 90 |
| CE531       | Civil Design 90 |
| CE591       | Professional Practices 60 |
| Electives (3) chosen from | |
| CE511       | Structural Mechanics |
| CE531       | Water Engineering |
| CE532       | Environmental Engineering 135 |
| CE552       | Structural Design |
| CE561       | Transport Engineering |
| CE571       | Construction |
| CE581       | Geomechanics |
| CE592       | Municipal Engineering |
|            | 375 |

**Fifth year**

<table>
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<tr>
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<tbody>
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<tr>
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</tr>
<tr>
<td>CE591 Professional Practices</td>
</tr>
<tr>
<td>Electives (3) chosen from</td>
</tr>
<tr>
<td>CE511 Structural Mechanics</td>
</tr>
<tr>
<td>CE531 Water Engineering</td>
</tr>
<tr>
<td>CE532 Environmental Engineering</td>
</tr>
<tr>
<td>CE552 Structural Design</td>
</tr>
<tr>
<td>CE561 Transport Engineering</td>
</tr>
<tr>
<td>CE571 Construction</td>
</tr>
<tr>
<td>CE581 Geomechanics</td>
</tr>
<tr>
<td>CE592 Municipal Engineering</td>
</tr>
</tbody>
</table>

*Approved subjects chosen from Art, Arts or Business. See section entitled 'Engineering subject details' for information on general elective subjects.

**Fifth year**

<table>
<thead>
<tr>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE53 Structural Design 45</td>
</tr>
<tr>
<td>CE54 Structural Design 45</td>
</tr>
<tr>
<td>CE502 Investigation Project 45</td>
</tr>
<tr>
<td>CE553 Civil Design</td>
</tr>
</tbody>
</table>

*Part-time students may undertake these subjects over two semesters as:*

<table>
<thead>
<tr>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE353 Structural Design</td>
</tr>
<tr>
<td>CE453 Structural Design</td>
</tr>
<tr>
<td>CE502 Investigation Project</td>
</tr>
<tr>
<td>CE553 Civil Design 45</td>
</tr>
</tbody>
</table>

|            | 375 |
Degree conversion program — 1980 syllabus

For diplomates
Persons holding a diploma of civil engineering may be accepted to undertake further studies to gain the degree of Bachelor of Engineering (Civil). The course to be followed is individually assessed for each applicant and usually consists of selected subjects from the third and fourth years of the 1980 degree followed by a complete fifth year. Applicants with suitable work experience in engineering will not be required to undertake further cooperative work experience.

Diploma of Building Surveying

This is a new course which commenced in 1981. It is intended to prepare students for the profession of building surveying and to meet the educational requirements for membership of the Australian Institute of Building Surveyors. In recent years the AIBS has sought the development of more advanced courses in building surveying to enable future members of the profession to cope with anticipated changes in building technology and materials and this course has been designed to meet these needs. 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 Technical College.

Career potential
At present, about eight out 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 and/or evening classes from the required subjects of the course.

Availability of evening classes naturally depends on enrolment figures.
Entrance requirements
Standard entry to the first year of the Diploma of Building Surveying requires satisfactory completion of year 12 (sixth form) in a Victorian secondary school in at least four subjects including English. Recommended subjects are physics and a branch of mathematics.

Students who have completed a Certificate of Technology satisfactorily in an appropriate area, will be admitted into the course with some exemptions, as appropriate.

Special provision will be made for mature-age entry, for students who have the ability to cope with the proposed course of study.

Course structure (1981 syllabus)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Sem 1</th>
<th>Sem 2</th>
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<tbody>
<tr>
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<td>30</td>
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<td>CE112</td>
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Total: 360 hours

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
<th>Sem 3</th>
<th>Sem 4</th>
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<tr>
<td>BS299</td>
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<td>CE272</td>
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<td>CE273</td>
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<tr>
<td>MF222</td>
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Total: 360 hours

<table>
<thead>
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<th>Hours</th>
<th>Sem 5</th>
<th>Sem 6</th>
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<tr>
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<td>CE379</td>
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Total: 360 hours

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<thead>
<tr>
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<th>Hours</th>
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<td>CE482</td>
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<tr>
<td>CE492</td>
<td></td>
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</tbody>
</table>

Total: 360 hours

Graduate Diploma in Civil Engineering Construction
This course is designed to provide practising engineers and architects with a knowledge of the latest developments in construction engineering and with the capacity to control these techniques from the financial and technical viewpoints.

The total course duration is 480 hours, usually undertaken as a two-year part-time course and requiring attendance for two nights of the week. It runs over four semesters, each of fifteen teaching weeks.

The use of case studies is emphasised in the learning program and students are expected to participate in syndicate discussion activity, especially in civil engineering areas. Parts of the course will be conducted in short periods of intensive full-time study to facilitate this syndicate discussion. During the course students are required to undertake industrially-oriented projects and are expected to be working in an engineering environment.

Practising construction engineers assist institute staff in teaching selected parts of the course.

Prerequisites
Students should have a professional qualification in engineering or architecture and a minimum of two years’ experience following graduation to gain admission.
Graduate Diploma in Civil Engineering

This course is designed to provide advanced studies in civil engineering for graduate engineers. The required entry qualifications are a diploma or degree in civil engineering or approved equivalent.

Three streams are available, specialising in structures, hydraulics, or municipal engineering. The course takes three years of part-time evening study at the rate of two nights per week for thirty weeks of each year, but can be completed in two years by attending for three nights per week. The duration of each subject is 90 hours per year.

Course structure

Structural stream

<table>
<thead>
<tr>
<th>First year</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours per year</th>
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</thead>
<tbody>
<tr>
<td>CE611</td>
<td>Structural Mechanics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>SM623</td>
<td>Engineering Mathematics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE751</td>
<td>Concrete Design and Construction</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CF752</td>
<td>Design of Steel Structures</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Third year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE881</td>
<td>Soil Mechanics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE851</td>
<td>Design Projects</td>
<td>90</td>
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Hydraulics stream

<table>
<thead>
<tr>
<th>First year</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE623</td>
<td>Town Planning</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>SM623</td>
<td>Engineering Mathematics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>CE681</td>
<td>Geology</td>
<td>90</td>
</tr>
<tr>
<td>Second year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE751</td>
<td>Concrete Design and Construction</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE731</td>
<td>Hydraulics and Public Health Engineering</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Third year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE881</td>
<td>Soil Mechanics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE851</td>
<td>Design Projects</td>
<td>90</td>
<td></td>
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</tbody>
</table>

Municipal and highway engineering stream

<table>
<thead>
<tr>
<th>First year</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE623</td>
<td>Town Planning</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE693</td>
<td>Powers and Duties of Local Government Engineers</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Second year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE761</td>
<td>Municipal and Highway Engineering</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>CE731</td>
<td>Hydraulics and Public Health Engineering</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Third year</td>
<td>Course Code</td>
<td>Course Name</td>
<td>Hours per year</td>
</tr>
<tr>
<td>CE881</td>
<td>Soil Mechanics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>SM623</td>
<td>Engineering Mathematics</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>CE681</td>
<td>Geology</td>
<td>90</td>
</tr>
</tbody>
</table>

Certificated Engineer

The Municipal Engineers Board of Victoria conducts examinations leading to the qualification of Certificated Engineer (CE), a postgraduate qualification required by all municipal engineers in Victoria.

Four subjects, which form part of the municipal and highway engineering stream of the course, can be used as preparation for the CE examinations which take place in August each year. The subjects have been designed to cover all the important areas in the municipal board syllabuses before going on to more advanced work. The four subjects are:

- CE731 Hydraulics and Public Health Engineering
- CE623 Town Planning
- CE693 Powers and Duties of Local Government Engineers
- CE761 Municipal and Highway Engineering

Two subjects, CE731 and CE693 also cover topics relevant to the Engineer of Water Supply examinations.
Graduate Diploma in Transportation Systems

This course is designed to fill a need in modern society for skilled transportation specialists. It is open to qualified engineers, town planners, architects, economists and surveyors.

Applicants with qualifications in science, mathematics or other areas will also be considered for admission.

Specific areas of study within the course are:
(1) environmental planning and urban design;
(2) statistical techniques and computer applications;
(3) transportation engineering and traffic engineering practice;
(4) public and freight transportation systems.

The course is designed to take three years of part-time study, necessitating two evenings per week attendance at the institute for thirty weeks during the year, but can be compressed into two years.

In the first two years considerable emphasis is given to the broad principles underlying the design and operation of public and freight transportation systems, including the environmental and sociological effects resulting from such systems. In the final year, transportation legislation is studied in detail, together with either a transportation case study or two elective topics.

Practising planners will assist institute staff in teaching selected parts of the course.

Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>First year</th>
<th>Hours year</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE661</td>
<td>Environmental Planning</td>
<td>45</td>
</tr>
<tr>
<td>CE662</td>
<td>Transport Systems</td>
<td>45</td>
</tr>
<tr>
<td>CE663</td>
<td>Traffic Engineering Practices</td>
<td>45</td>
</tr>
<tr>
<td>SM601</td>
<td>Statistical Techniques</td>
<td>45</td>
</tr>
<tr>
<td><strong>Second year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B5762</td>
<td>Transport Economics</td>
<td>45</td>
</tr>
<tr>
<td>CE762</td>
<td>Public Transport Systems</td>
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</tr>
<tr>
<td>CE763</td>
<td>Freight Transport Operations</td>
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<tr>
<td>CE764</td>
<td>Urban Design</td>
<td>45</td>
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<tr>
<td><strong>Third year</strong></td>
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<td></td>
</tr>
<tr>
<td>CE861</td>
<td>Transport Legislation</td>
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<tr>
<td>SK891</td>
<td>Computer Appreciation</td>
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<tr>
<td>CE863</td>
<td>Project. Case Study of Transportation Problem</td>
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<tr>
<td><strong>Electives (2) from</strong></td>
<td></td>
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<tr>
<td>B5862</td>
<td>Advanced Transport Economics</td>
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<tr>
<td>CE865</td>
<td>Urban Design and Landscaping II</td>
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</tr>
<tr>
<td>SK892</td>
<td>Advanced Computer Techniques</td>
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<tr>
<td>SM891</td>
<td>Advanced Analytical Techniques</td>
<td>540</td>
</tr>
</tbody>
</table>

Graduate Diploma in Urban Systems

This course is open to graduates with diplomas or degrees in engineering, architecture, surveying or other allied fields. Students qualified in science, mathematics or similar areas and working at planning will also be considered for admission. The course provides specialist training in urban planning in the following:
(1) urban economics and urban sociology;
(2) urban water supply, waste disposal, energy systems;
(3) systems planning and modelling.

A systems approach to planning is emphasised, in which information from a variety of disciplines is integrated for the solution of urban planning problems.

The course takes three years of part-time evening study at the rate of two nights per week for thirty weeks of each year.

The duration of each subject is 45 hours per semester.

Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>First year</th>
<th>Hours year</th>
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<tbody>
<tr>
<td>CE621</td>
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<tr>
<td>B561</td>
<td>Urban Economics</td>
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</tr>
<tr>
<td>AT691</td>
<td>Urban Sociology</td>
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<tr>
<td><strong>Second year</strong></td>
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<tr>
<td>CE721</td>
<td>Urban Systems 2</td>
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</tr>
<tr>
<td>CE722</td>
<td>Environmental Systems Management</td>
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<td>CE723</td>
<td>Urban Transport</td>
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<tr>
<td><strong>Third year</strong></td>
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<tr>
<td>CE821</td>
<td>Urban Systems 3</td>
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<td>Urban Design</td>
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<tr>
<td><strong>Electives from</strong></td>
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<tr>
<td>B5861</td>
<td>Urban Economics</td>
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<td>CE823</td>
<td>Urban Transport Systems</td>
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<td>CE824</td>
<td>Systems Planning</td>
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<td>CE825</td>
<td>Environmental Engineering</td>
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<td>AT791</td>
<td>Urban Sociology</td>
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<tr>
<td>CE836</td>
<td>Urban Energy Systems</td>
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</table>

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 electric 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 10kV 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 for the Swinburne Applied Research and Development Division. 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 Industrial 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 Energy Systems**
- **Graduate Diploma in Telecommunication Systems Management**

**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.

**Degree of Bachelor of Engineering (Electrical and Electronic) 1980 Syllabus**

The degree course is a general electrical engineering program for the first three years, with major study streams in electronics or in electrical power in years four and five. Both streams offer a choice of electives for specialised study.

**Course structure**

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester 1</td>
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<tr>
<td>AT194 Thinking and Communicating</td>
<td>60</td>
</tr>
<tr>
<td>CE111 Applied Mechanics</td>
<td>90</td>
</tr>
<tr>
<td>EE103 Electrical Circuits and Devices</td>
<td>60</td>
</tr>
<tr>
<td>ME125 Thermodynamics and Heat Transfer</td>
<td>60</td>
</tr>
<tr>
<td>MP101 Engineering Drawing</td>
<td>90</td>
</tr>
<tr>
<td>MP102 Engineering Practice and Processes</td>
<td>60</td>
</tr>
<tr>
<td>SC194 Chemistry</td>
<td>90</td>
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<td>SK194 Computation</td>
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</tr>
<tr>
<td>SM194 Engineering Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SP194 Physics</td>
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<tr>
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<tr>
<td>Semester 2</td>
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</tr>
<tr>
<td>EE283 Electrical Circuits and Fields</td>
<td>120</td>
</tr>
<tr>
<td>EE283 Electromagnetic Devices</td>
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<tr>
<td>EE287 Electronics</td>
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<td>EE237 Electrical Design</td>
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<td>SM294 Engineering Mathematics</td>
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<tr>
<td>MP283 Engineering Materials</td>
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<tr>
<td>EE281 Electrical Measurements</td>
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</tr>
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<td>EE282 Communication Principles</td>
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<td>EE290 Environmental Engineering</td>
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<td></td>
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<td>Semester 3</td>
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<tr>
<td>EE301 Industrial Experience</td>
<td>24 weeks</td>
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<td>Semester 4</td>
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</tr>
<tr>
<td>EE385 Electrical Power and Machines</td>
<td>75</td>
</tr>
<tr>
<td>EE387 Electronics and Communications</td>
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<td>EE387 Electromagnetic Fields</td>
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<tr>
<td>EE389 Linear Control Systems</td>
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<tr>
<td>EE387 Electrical Design</td>
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<tr>
<td>SM394 Engineering Mathematics</td>
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</tr>
<tr>
<td></td>
<td>375</td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Fourth year</td>
<td></td>
</tr>
<tr>
<td>Electrical Power stream</td>
<td>Hours</td>
</tr>
<tr>
<td>Semester 1</td>
<td></td>
</tr>
<tr>
<td>EE485 Electrical Power and Machines</td>
<td>90</td>
</tr>
<tr>
<td>EE486 Electronics and Communications</td>
<td>60</td>
</tr>
<tr>
<td>EE489 Control Systems</td>
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</tr>
<tr>
<td>EE485 Electrical Design</td>
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</tr>
<tr>
<td>MP422 Engineering Administration</td>
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</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td>45</td>
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<td></td>
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</tbody>
</table>
### Semester 2

**Fourth year**

**Electronics stream**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE488</td>
<td>Electrical Power and Machines</td>
<td>60</td>
</tr>
<tr>
<td>EE487</td>
<td>Electronics and Communication</td>
<td>90</td>
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<tr>
<td>EE489</td>
<td>Control Systems</td>
<td>60</td>
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<tr>
<td>EE457</td>
<td>Electronic Design</td>
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<tr>
<td>MN22</td>
<td>Engineering Administration</td>
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</tr>
<tr>
<td>SM494</td>
<td>Engineering Mathematics</td>
<td>45</td>
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<tr>
<td></td>
<td>General Elective</td>
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<td></td>
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</tr>
</tbody>
</table>

**Semester 2**

**EE401 Industrial Experience** 24 weeks

*Approved subjects chosen from Art, Arts or Business. See section entitled ‘Engineering subject details’ for information on general elective subjects.

**Fifth year**

**Electrical power stream**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE555</td>
<td>Electrical Design and Project</td>
<td>75</td>
</tr>
<tr>
<td>EE571</td>
<td>Operations Research in Electronic Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EE585</td>
<td>Electrical Power Engineering</td>
<td>120</td>
</tr>
<tr>
<td>plus two from —</td>
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<td>120</td>
</tr>
<tr>
<td>EE586</td>
<td>Electronics</td>
<td>60</td>
</tr>
<tr>
<td>EE589</td>
<td>Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE581</td>
<td>High Voltage Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE583</td>
<td>Electronic Machine Drives</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>375</strong></td>
</tr>
</tbody>
</table>

**Electronics stream**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE557</td>
<td>Electronic Design and Project</td>
<td>75</td>
</tr>
<tr>
<td>EE573</td>
<td>Operations Research in Electronic Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EE587</td>
<td>Electronic Engineering</td>
<td>120</td>
</tr>
<tr>
<td>plus two from —</td>
<td></td>
<td>120</td>
</tr>
<tr>
<td>EE582</td>
<td>Communications Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE584</td>
<td>Electronic Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE580</td>
<td>Computer Systems Engineering</td>
<td>60</td>
</tr>
<tr>
<td>EE589</td>
<td>Control Systems</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>375</strong></td>
</tr>
</tbody>
</table>

Certain electives in one stream may be selected by students in the other streams provided that approval is obtained from the head of department.

### Degree conversion program 1980 syllabus

For diplomas:

For holders of the Swinburne 1972 Diploma of Engineering (Electrical) or Diploma of Engineering (Electronic) or equivalent, the conversion program for the Degree of Bachelor of Engineering (Electrical), 1980 syllabus is:

**Electronics stream**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP294</td>
<td>Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>SM394</td>
<td>Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE488</td>
<td>Electrical Power and Machines</td>
<td></td>
</tr>
<tr>
<td>EE487</td>
<td>Electronics and Communication</td>
<td></td>
</tr>
<tr>
<td>SM494</td>
<td>Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE401</td>
<td>Industrial Experience</td>
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</tr>
<tr>
<td>EE557</td>
<td>Electronic Design and Project</td>
<td></td>
</tr>
<tr>
<td>EE573</td>
<td>Operations Research in Electronic Engineering</td>
<td></td>
</tr>
<tr>
<td>EE587</td>
<td>Electronic Engineering</td>
<td></td>
</tr>
<tr>
<td>plus two from —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE582</td>
<td>Communications Systems</td>
<td></td>
</tr>
<tr>
<td>EE584</td>
<td>Electronic Systems</td>
<td></td>
</tr>
<tr>
<td>EE580</td>
<td>Computer Systems Engineering</td>
<td></td>
</tr>
<tr>
<td>EE589</td>
<td>Control Systems</td>
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</table>

**Electrical power stream**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP294</td>
<td>Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>SM394</td>
<td>Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE485</td>
<td>Electrical Power and Machines</td>
<td></td>
</tr>
<tr>
<td>EE486</td>
<td>Electronics and Communications</td>
<td></td>
</tr>
<tr>
<td>EE494</td>
<td>Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE401</td>
<td>Industrial Experience</td>
<td></td>
</tr>
<tr>
<td>EE555</td>
<td>Electronic Design and Project</td>
<td></td>
</tr>
<tr>
<td>EE571</td>
<td>Operations Research in Electronic Engineering</td>
<td></td>
</tr>
<tr>
<td>EE585</td>
<td>Electrical Power Engineering</td>
<td></td>
</tr>
<tr>
<td>plus two from —</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE586</td>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td>EE589</td>
<td>Control Systems</td>
<td></td>
</tr>
<tr>
<td>EE581</td>
<td>High Voltage Systems</td>
<td></td>
</tr>
<tr>
<td>EE583</td>
<td>Electronic Machine Drives</td>
<td></td>
</tr>
</tbody>
</table>

**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. For persons who have completed courses which are not equivalent to the Swinburne 1972 Diploma of Engineering (Electrical or Electronic), special programs of study leading to the award of degree can be arranged.
Graduate Diploma in Digital Electronics

This part-time course is designed to provide practising engineers and scientists with the skills to assess modern digital equipment and to use it effectively in applications in their areas of speciality. The course provides a review of basic digital electronic devices and techniques as well as a detailed coverage of modern digital system design.

In keeping with the aim of the course, which is to meet needs of practising engineers and scientists, the course is application-oriented with significant emphasis on laboratory work and design experience. 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

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE405</td>
<td>Semiconductor Electronics</td>
<td>60</td>
<td>EE406 Digital Logic</td>
<td>60</td>
</tr>
<tr>
<td>EE407</td>
<td>Switching Circuit Analysis and Synthesis</td>
<td>60</td>
<td>EE408 Input/Output Techniques</td>
<td>60</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 1</th>
<th>Hours</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE505</td>
<td>Integrated Circuit Components</td>
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<td>EE506 Digital System Techniques</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE507</td>
<td>Digital System Applications</td>
<td>60</td>
</tr>
<tr>
<td>EE508</td>
<td>Design and Project</td>
<td>60</td>
</tr>
<tr>
<td></td>
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<td>480</td>
</tr>
</tbody>
</table>

Graduate Diploma in Energy Systems

The purpose of this part-time course is to provide to engineers in industry, government utilities and departments a formal, structured and systematic treatment of the major issues, both technical and socio-economic, in the energy area.

In the first year of the course the emphasis is on bringing engineers from various branches to a common level and on the introduction of interdisciplinary material namely in policy, economics and environmental technology. The second year contains the bulk of the advanced technology which incorporates further aspects of policy, economics and the environment.

The course usually entails two years’ part-time evening study necessitating attendance two nights per week for four fifteen-week semesters.

To gain admission to the course, applicants should have a degree or diploma in a branch of engineering, applied science or equivalent. Those who do not meet the specific entry requirements but who have appropriate experience in the energy field may be enrolled if they have the ability to cope with the course and would benefit from it.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Semester 1</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE417</td>
<td>Electrical Technology</td>
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<tr>
<td>EM417</td>
<td>Thermal Technology</td>
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<tr>
<td>BS417</td>
<td>Energy Economics</td>
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<table>
<thead>
<tr>
<th>Second year</th>
<th>Semester 1</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EM424</td>
<td>Energy Resources and Conversion</td>
<td>60</td>
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<tr>
<td>EM425</td>
<td>Environmental Engineering</td>
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<td>BS418</td>
<td>Energy Economics</td>
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<th>Second year</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>EE515</td>
<td>Energy Utilisation and Conversion</td>
<td>60</td>
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<tr>
<td>EM504</td>
<td>Energy Resources and Conversion</td>
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<table>
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<tr>
<th>Second year</th>
<th>Semester 2</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE516</td>
<td>Energy Utilisation and Conversion</td>
<td>60</td>
</tr>
<tr>
<td>EE517</td>
<td>Energy Transmission and Transportation</td>
<td>60</td>
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<td></td>
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</tbody>
</table>
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.

Course structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM631 Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>EE631 Electrical Power &amp; Electronics</td>
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<tr>
<td>EE632 Administrative Practice</td>
<td>60</td>
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<td>EE633 Telecommunication Principles</td>
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<td>SK631 Computer Programming</td>
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<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE731 Electronics</td>
<td>60</td>
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<tr>
<td>EE733 System Planning and Control</td>
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<td>EE734 Telecommunication Systems</td>
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<td>EE735 Elective Subject</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>300</strong></td>
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</table>

Degree of 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 and para-professional qualifications in manufacturing and production engineering. 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. Degree students (1975 syllabus) undertake eighteen months' industrial experience. 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 metrology laboratory is registered with the National Association for Testing Authorities and 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)
- Associate Diploma in Production Engineering
- Graduate Diploma in Chemical Engineering
- Graduate Diploma in Biochemical Engineering
- Graduate Diploma in Industrial Management
- Graduate Diploma in Manufacturing Technology

- Degree of Master of Engineering
- This is a para-professional course

Various changes to the structures of the above courses, with the exception of the graduate diploma course in industrial management and the degree of master of engineering, are planned for 1983. Further information is available from the Department of Manufacturing Engineering.

Career potential

Manufacturing/Production/Industrial engineering

Manufacturing engineers are associated with activities such as factory management, operation planning, tool design, production planning and control, work study, product design and quality control.

The undergraduate programs leading to the award of the Degree of Bachelor of Engineering (Manufacturing) are cooperative educational programs designed to prepare the student for a professional career in the field of manufacturing. Because of the general applicability of the principles taught, manufacturing engineers are employed in a wide range of industries including engineering, plastics, textiles, clothing manufacture, retailing and food processing industries.

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. Opportunities exist for graduates in manufacturing engineering with a variety of backgrounds in manufacturing technology including a knowledge of the traditional metal-working processes, the growing fields associated with non-metallic materials, particularly plastic and ceramic materials, and a wide range of chemical processes associated with the food industry and many other industries.
Degree of 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.

In third year, there is an opportunity for students to specialise in one of three areas within the manufacturing technology, and design for manufacture subjects.

The areas of special study are:
- Production Engineering and Design
- Materials Engineering and Design
- Chemical Engineering and Design

The degree course is recognised by the Institution of Engineers, Australia, and the Institution of Production Engineers. Completion of the course gives full exemption to courses.

Course structure

The first, second, third and fourth year courses are shown for students entering in 1980 or later.

The course for fifth year is shown for students entering in 1979 or later.

Students who entered prior to 1979 and students wishing to undertake part-time study must consult the head of department for details of modifications to courses.

First year (1980 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM194</td>
<td>Engineering Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SP194</td>
<td>Physics</td>
<td>90</td>
</tr>
<tr>
<td>SC194</td>
<td>Chemistry</td>
<td>90</td>
</tr>
<tr>
<td>SK194</td>
<td>Computations</td>
<td>30</td>
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<tr>
<td>MP101</td>
<td>Engineering Drawing</td>
<td>90</td>
</tr>
<tr>
<td>MP102</td>
<td>Engineering Practices and Processes</td>
<td>60</td>
</tr>
<tr>
<td>CE111</td>
<td>Applied Mechanics</td>
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</tr>
<tr>
<td>ME125</td>
<td>Thermochemistry and Heat Transfer</td>
<td>60</td>
</tr>
<tr>
<td>EE183</td>
<td>Electrical Circuits and Devices</td>
<td>60</td>
</tr>
<tr>
<td>AT194</td>
<td>Thinking and Communicating</td>
<td>60</td>
</tr>
</tbody>
</table>

Second year (1980 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM296</td>
<td>Engineering Mathematics</td>
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</tr>
<tr>
<td>SA296</td>
<td>Physical Science</td>
<td>60</td>
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<tr>
<td>ME219</td>
<td>Advanced Mechanics</td>
<td>150</td>
</tr>
<tr>
<td>AT289</td>
<td>Liberal Studies</td>
<td>45</td>
</tr>
<tr>
<td>SK296</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
<tr>
<td>EE284</td>
<td>Electronic Circuits and Devices</td>
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<tr>
<td>MP211</td>
<td>Manufacturing Technology</td>
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<tr>
<td>MP201</td>
<td>Engineering Materials</td>
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<tr>
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Third year (1980 syllabus)

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MP300</td>
<td>Industrial Experience</td>
<td>24 week</td>
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<table>
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<th>Semester 2</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>SM396</td>
<td>Engineering Mathematics</td>
<td>60</td>
</tr>
<tr>
<td>MP381</td>
<td>Systems Engineering</td>
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</tr>
<tr>
<td>ME319</td>
<td>Instrumentation and Control</td>
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<tr>
<td>MP321</td>
<td>Applied Mechanics</td>
<td>45</td>
</tr>
<tr>
<td>MP351</td>
<td>Engineering Administration</td>
<td>60</td>
</tr>
<tr>
<td>MP311</td>
<td>Design for Manufacture</td>
<td>75</td>
</tr>
<tr>
<td>or</td>
<td>Manufacturing Technology (P)</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td>Manufacturing Technology (M)</td>
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<td>or</td>
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</table>

Note: (P), (M) and (C) denote Production, Materials and Chemical Technology streams respectively.

Fourth year (1980 syllabus)

<table>
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<tr>
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<tbody>
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<td>MP400</td>
<td>Industrial Experience</td>
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*Approved subjects chosen from Arts, Arts or Business. See section entitled 'Engineering subject details' for Information on general elective subjects.

Fifth year (1975 syllabus)

<table>
<thead>
<tr>
<th>Semester 9 (18 weeks)</th>
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<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>EPS251</td>
<td>Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td>EPS35</td>
<td>Industrial Engineering</td>
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</tr>
<tr>
<td>EPS54</td>
<td>Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td>EPS51</td>
<td>Production Technology</td>
<td>63</td>
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<tr>
<td>EPS56</td>
<td>Elective</td>
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<tr>
<td>EPS55</td>
<td>Manufacturing Systems</td>
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</table>

Materials technology stream

| EPS25 | Industrial Management | 54 |
| EPS35 | Industrial Engineering | 54 |
| EPS55 | Design for Manufacture | 94 |
| MT515 | Materials Technology   | 252 |

Note: One week assignment at end of course — 36 hours included.

For information only — the proposed fifth year of the 1980 syllabus is as follows:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>MP300</td>
<td>Industrial Experience</td>
<td>24 week</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
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<tbody>
<tr>
<td>SM396</td>
<td>Engineering Mathematics</td>
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</tr>
<tr>
<td>MP351</td>
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</tr>
<tr>
<td>MP311</td>
<td>Design for Manufacture</td>
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<td>or</td>
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Note: (P), (M) and (C) denote Production, Materials and Chemical Technology streams respectively.

Fifth year (1980 syllabus)

<table>
<thead>
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<th>Semester 9 (18 weeks)</th>
<th>Production technology stream</th>
<th>Hours</th>
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<tbody>
<tr>
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<td>Design for Manufacture</td>
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<tr>
<td>EPS56</td>
<td>Elective</td>
<td>45</td>
</tr>
<tr>
<td>EPS55</td>
<td>Manufacturing Systems</td>
<td>144</td>
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</tbody>
</table>

Materials technology stream

| EPS25 | Industrial Management | 54 |
| EPS35 | Industrial Engineering | 54 |
| EPS55 | Design for Manufacture | 94 |
| MT515 | Materials Technology   | 252 |

Note: One week assignment at end of course — 36 hours included.

For information only — the proposed fifth year of the 1980 syllabus is as follows:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>MP300</td>
<td>Industrial Experience</td>
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Fifth year (1980 syllabus)

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Materials technology stream

| EPS25 | Industrial Management | 54 |
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| EPS55 | Design for Manufacture | 94 |
| MT515 | Materials Technology   | 252 |

Note: One week assignment at end of course — 36 hours included.

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Fifth year (1980 syllabus)

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<tr>
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<tr>
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</tr>
<tr>
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<td>Manufacturing Systems</td>
<td>144</td>
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Materials technology stream

| EPS25 | Industrial Management | 54 |
| EPS35 | Industrial Engineering | 54 |
| EPS55 | Design for Manufacture | 94 |
| MT515 | Materials Technology   | 252 |

Note: One week assignment at end of course — 36 hours included.

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<tbody>
<tr>
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</table>

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<tr>
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<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
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<td>MP381</td>
<td>Systems Engineering</td>
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</tr>
<tr>
<td>ME319</td>
<td>Instrumentation and Control</td>
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<tr>
<td>MP321</td>
<td>Applied Mechanics</td>
<td>45</td>
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<tr>
<td>MP351</td>
<td>Engineering Administration</td>
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</table>

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### Fifth year
#### Semester 1 only

<table>
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<td>MP521</td>
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</tbody>
</table>

*Includes one week project at end of semester
Value 25 hours

---

### Degree conversion program 1980 syllabus

#### For diplomats

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

The purpose of this course is to provide job-oriented studies to suit the needs of students and employers and to serve the community. It is a para-professional course which leads to a middle-level vocation in which the graduate will have contact with a large variety of people within the manufacturing industry. The course provides a basic grounding in engineering science and technology appropriate to manufacturing and includes basic studies in aspects of industrial engineering, management, and manufacturing technology appropriate to many middle-level supervisory functions in industry.

#### Course structure

This course may be taken in either the cooperative format (one year at Swinburne, one year in industry, followed by one year at Swinburne) or as a part-time course involving some day release and evening studies.

### Cooperative format

#### First year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC113</td>
<td>Engineering Science – Chemistry</td>
<td>60</td>
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<tr>
<td>MP101</td>
<td>Engineering Science – Materials</td>
<td>60</td>
</tr>
<tr>
<td>EE139</td>
<td>Engineering Principles – Electricity</td>
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<tr>
<td>ME119</td>
<td>Engineering Principles – Mechanics</td>
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</tr>
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<td>ME129</td>
<td>Engineering Principles – Heat</td>
<td>30</td>
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<tr>
<td>MP105</td>
<td>Engineering Tutorial</td>
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<tr>
<td>MP103</td>
<td>Engineering Drawing and Graphics</td>
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<tr>
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Total: 720 hours

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#### Second year

<table>
<thead>
<tr>
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<th>Course Title</th>
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<tbody>
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48 weeks

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#### Third year

<table>
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<th>Course Title</th>
<th>Hours</th>
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</thead>
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<td>SM311</td>
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<td>Engineering Organisation and Work Design</td>
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<td>ME318</td>
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<td>EE339</td>
<td>Applied Electricity</td>
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<td>MP323</td>
<td>Plant Administration</td>
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</tr>
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<td>MP324</td>
<td>Human Aspects</td>
<td>30</td>
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<td>MP331</td>
<td>Work Improvement</td>
<td>60</td>
</tr>
<tr>
<td>MP332</td>
<td>Industrial Engineering</td>
<td>60</td>
</tr>
<tr>
<td>MP318</td>
<td>Introduction to Machines, Materials and Processes</td>
<td>60</td>
</tr>
<tr>
<td>MP315</td>
<td>Production Machine Design</td>
<td>60</td>
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<td>MP316</td>
<td>Manufacturing Technology</td>
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</tr>
<tr>
<td>MP317</td>
<td>Measurement and Finishing</td>
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</table>

Total: 720 hours
Graduate Diploma in Chemical Engineering

This is a two-year, part-time course intended to provide the basic knowledge of chemical engineering for graduates in either applied science or engineering who are working or intend to work in the chemical industries. The course is planned to be completed in two years of 3 x 3-hour evenings per week throughout the academic year of thirty weeks.

Course structure

First year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA201</td>
<td>Chemical Engineering 1A</td>
</tr>
<tr>
<td>EA211</td>
<td>Chemical Engineering 1B</td>
</tr>
<tr>
<td>EA202</td>
<td>Chemical Engineering</td>
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Second year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EA311</td>
<td>Chemical Engineering 11A</td>
</tr>
<tr>
<td>EA312</td>
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<td>Chemical Engineering 11C</td>
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<td></td>
<td><strong>Total</strong></td>
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</table>

Graduate Diploma in Biochemical Engineering

This is a course designed specifically for graduates in chemical engineering who are working in such areas as the food industry, processing of natural products, antibiotics and biological waste treatment. Suitable options are, however, available for biochemists and microbiologists who are interested in the engineering aspects of biological processes.

The course is scheduled to be undertaken over two years by 3 x 3-hour evenings per week over a thirty-week teaching year. Laboratory work is provided in all subjects but is not obligatory.

Course structure

First year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC571</td>
<td>Biology</td>
</tr>
<tr>
<td>EA411</td>
<td>Non Newtonian Heat Mass and Momentum Transfer</td>
</tr>
<tr>
<td>SC582</td>
<td>Engineering Biochemistry</td>
</tr>
</tbody>
</table>

Second year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC572</td>
<td>Microbiology</td>
</tr>
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<td>SC583</td>
<td>Physical Biochemistry</td>
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<tr>
<td>EA491</td>
<td>Biochemical Engineering</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
</tr>
</tbody>
</table>

Biochemists, or others who have covered appropriate parts of the course, could attend the corresponding course offered in chemical engineering.

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


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>
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</tr>
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<td>EP423 Financial Aspects of Industrial Management</td>
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<tr>
<td>EP424 Human Relations in Industry</td>
<td>60</td>
</tr>
<tr>
<td>EP426 Management Practice</td>
<td>90</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</table>

*Management practice is taken in the final year or the course.

Optional subjects (three to be taken)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425 Legal Aspects of Industrial Management</td>
<td>60</td>
</tr>
<tr>
<td>EP431 Production Management</td>
<td>60</td>
</tr>
<tr>
<td>EP432 Work Study</td>
<td>60</td>
</tr>
<tr>
<td>EP437 Computer Techniques</td>
<td>60</td>
</tr>
<tr>
<td>EP435 Physical Distribution Management</td>
<td>60</td>
</tr>
<tr>
<td>EP436 Environmental Studies</td>
<td>60</td>
</tr>
</tbody>
</table>

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.

It is arranged to be taken part-time over two years. The lecture or class time is forty hours and fifty hours: compulsory subjects of two hundred and seventy hours; and one hundred and eighty hours of optional subjects. Not more than one hundred and twenty hours of optional subjects may be taken from group 1.

Candidates for admission should be twenty-four years of age, hold a diploma or degree in engineering or science and two years’ industrial experience. Applicants without the formal requirement but who have had considerable relevant experience in manufacturing will be considered.

Course structure

<table>
<thead>
<tr>
<th>Compulsory subjects</th>
<th>Subject</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP611</td>
<td>Metal-working Technology</td>
<td>90</td>
</tr>
<tr>
<td>EP612</td>
<td>Polymer Processing Technology</td>
<td>90</td>
</tr>
<tr>
<td>EP613</td>
<td>Manufacturing Systems</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>270</strong></td>
</tr>
</tbody>
</table>

Optional subjects

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Subject</th>
<th>hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP431</td>
<td>Production Management</td>
<td>60</td>
</tr>
<tr>
<td>EP432</td>
<td>Work Study</td>
<td>60</td>
</tr>
<tr>
<td>EP436</td>
<td>Environmental Studies</td>
<td>60</td>
</tr>
<tr>
<td>SK527</td>
<td>Computing Techniques</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>240</strong></td>
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<table>
<thead>
<tr>
<th>Group 2</th>
<th>Subject</th>
<th>hours</th>
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</thead>
<tbody>
<tr>
<td>EP621</td>
<td>Experimental Design and Instrumentation</td>
<td>60</td>
</tr>
<tr>
<td>EP622</td>
<td>Industrial Health</td>
<td>30</td>
</tr>
<tr>
<td>EP624</td>
<td>Oxide Technology - Glass</td>
<td>30</td>
</tr>
<tr>
<td>EP625</td>
<td>Oxide Technology - Ceramic and Refractory</td>
<td>30</td>
</tr>
<tr>
<td>EP626</td>
<td>Sheet Metal Technology</td>
<td>30</td>
</tr>
<tr>
<td>EP627</td>
<td>Low Cost Automation</td>
<td>30</td>
</tr>
<tr>
<td>EP628</td>
<td>Quality and Reliability Engineering</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>180</strong></td>
</tr>
</tbody>
</table>

Degree of 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 Mechanical Engineering

The degree courses provide a thorough education in the application of engineering science principles and combine with this broad span of studies, important to a professional engineer, such as economics, psychology, human engineering, administration, and communication techniques. Students work in modern buildings where the facilities available include laboratories, design rooms, seminar rooms, library study areas, engineering workshop and digital, analogue and hybrid computers. There is a strong emphasis on the teaching approach and use of tutorial laboratory work. The mentor scheme which operates in the mechanical engineering department provides each student with a ready source of advice on any aspect of course or career.

To qualify for the degree, each student must complete two periods of approved industrial experience supervised by both Swinburne engineering staff and engineers in industry. This is arranged in the third and fourth years of study.

The cooperative industrial experience in the course amounts to forty-eight weeks. The experience gained is of considerable value in providing opportunities to learn from practising engineers and in helping to consolidate the more formal theoretical work undertaken at Swinburne. The mechanical engineering department gratefully acknowledges the assistance of engineers in many companies and government departments whose support has greatly enhanced the value of these periods of industrial experience.

Courses offered

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.
Degree of 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 1983 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) 1971 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.

Those who have reached diploma standard and are now engaged in industry may continue to proceed by part-time day release and evening work to the degree of Bachelor of Engineering by completing the Degree Conversion Program (1980 syllabus)

Course structure (1980 syllabus)

First year

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT194</td>
<td>Thinking and Communicating 60</td>
</tr>
<tr>
<td>CEE113</td>
<td>Applied Mechanics 90</td>
</tr>
<tr>
<td>EE13S</td>
<td>Electrical Circuits and Devices 60</td>
</tr>
<tr>
<td>ME125</td>
<td>Thermodynamics and Heat Transfer 60</td>
</tr>
<tr>
<td>MP101</td>
<td>Engineering Drawing 90</td>
</tr>
<tr>
<td>MP102</td>
<td>Engineering Practices and Processes 60</td>
</tr>
<tr>
<td>SC194</td>
<td>Chemistry 90</td>
</tr>
<tr>
<td>Sk194</td>
<td>Computations 30</td>
</tr>
<tr>
<td>SM194</td>
<td>Engineering Mathematics 90</td>
</tr>
<tr>
<td>SP194</td>
<td>Physics 90</td>
</tr>
<tr>
<td>Elective (1) from —</td>
<td></td>
</tr>
<tr>
<td>CEE101</td>
<td>Civil Engineering — Structures 30</td>
</tr>
<tr>
<td>EE136</td>
<td>Electrical Engineering 30</td>
</tr>
<tr>
<td>ME165</td>
<td>Mechanical Engineering Systems 90</td>
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<tr>
<td>MP191</td>
<td>Manufacturing Engineering 90</td>
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Second year

<table>
<thead>
<tr>
<th>Semesters 3 and 4</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SM196</td>
<td>Engineering Mathematics 90</td>
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<tr>
<td>Sk298</td>
<td>Computer Programming 30</td>
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<tr>
<td>ME261</td>
<td>Engineering Practices 90</td>
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<tr>
<td>ME221</td>
<td>Applied Mechanics 150</td>
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<tr>
<td>ME221</td>
<td>Energy Systems 9u</td>
</tr>
<tr>
<td>ME211</td>
<td>Instrumentation and Control Systems 30</td>
</tr>
<tr>
<td>MP284</td>
<td>Engineering Materials 45</td>
</tr>
<tr>
<td>ME241</td>
<td>People Environment Systems 60</td>
</tr>
<tr>
<td>BS294</td>
<td>Managerial Economics 30</td>
</tr>
<tr>
<td>ME271</td>
<td>Design for Industry 90</td>
</tr>
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Third year

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>ME391</td>
<td>Industrial Experience 24 weeks</td>
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<table>
<thead>
<tr>
<th>Semester 6</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SM398</td>
<td>Engineering Mathematics 45</td>
</tr>
<tr>
<td>ME311</td>
<td>Applied Mechanics 75</td>
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<tr>
<td>ME321</td>
<td>Energy Systems 45</td>
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<tr>
<td>ME331</td>
<td>Instrumentation and Control Systems 30</td>
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<td>MP384</td>
<td>Engineering Materials 45</td>
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<tr>
<td>ME341</td>
<td>People Environment Systems 45</td>
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<td>MP314</td>
<td>Manufacturing Technology 45</td>
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<td>ME371</td>
<td>Design for Industry 45</td>
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Fourth year

<table>
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<tr>
<th>Semester 7</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SM438</td>
<td>Engineering Mathematics 45</td>
</tr>
<tr>
<td>ME411</td>
<td>Applied Mechanics 75</td>
</tr>
<tr>
<td>ME421</td>
<td>Energy Systems 30</td>
</tr>
<tr>
<td>ME431</td>
<td>Instrumentation and Control Systems 30</td>
</tr>
<tr>
<td>ME441</td>
<td>People Environment Systems 45</td>
</tr>
<tr>
<td>ME471</td>
<td>Design for Industry 45</td>
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<tr>
<td>ME481</td>
<td>Engineering Investigation 45</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME491</td>
<td>Industrial Experience 24 weeks</td>
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</table>

<table>
<thead>
<tr>
<th>Semester 9</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME511</td>
<td>Applied Mechanics 75</td>
</tr>
<tr>
<td>ME541</td>
<td>People Environment Systems 45</td>
</tr>
<tr>
<td>ME581</td>
<td>Cooperative Project 75</td>
</tr>
<tr>
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<td>135</td>
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</table>

<table>
<thead>
<tr>
<th>Fifth year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME551</td>
<td>Decision Analysis and Financial Management 45</td>
</tr>
<tr>
<td>ME552</td>
<td>Plant Information Systems 45</td>
</tr>
<tr>
<td>ME561</td>
<td>Engineering Plant and Equipment 45</td>
</tr>
<tr>
<td>SM598</td>
<td>Engineering Mathematics 45</td>
</tr>
<tr>
<td></td>
<td>375</td>
</tr>
</tbody>
</table>

*Approved subjects chosen from Art, Arts or Business.

See section entitled ‘Engineering subject details’ for information on general electives.
Degree conversion program (1980 syllabus)

For diplomates

For diplomates who have completed the Swinburne 1972 course for the Diploma of Engineering (Mechanical), or its equivalent, the conversion program for the Degree of Bachelor of Engineering in Mechanical Engineering, 1980 syllabus is:

- **SM398** Engineering Mathematics
- **ME331** Instrumentation and Control Systems
- **SM498** Engineering Mathematics
- **ME411** Applied Mathematics
- **ME431** Instrumentation and Control Systems
- **ME441** People-environment Systems
- **ME491** Industrial Experience
- **ME511** Applied Mechanics
- **ME541** People-environment Systems
- **ME581** Cooperative Project

Together with

- **BS498** Decision Analysis and Financial Management
- **ME451** Technical Planning and Sales Engineering

Any three of the following seven subjects, including at least one of **ME551**, **ME552** and **BS599**.

- **SM598** Mathematics
- **ME521** Energy Systems
- **ME531** Instrumentation and Control Systems
- **ME551** Decision Analysis and Financial Management
- **ME561** Engineering Plant and Equipment
- **ME552** Plant Information Systems
- **BS599** Marketing, Law and Technological Forecasting

Notes

1. This program may be completed in two years of part-time study evening and/or day at an average rate of between eleven and twelve hours/week formal contact time.
2. Exemption from **ME491** Industrial Experience is granted where applicants have suitable industrial experience. Formal application is required for this exemption.
3. Diplomate from other colleges are considered individually.

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 three years.

The subjects involved are:

- **EM421** Process Heating
- **EM441** Air-conditioning 1
- **EM442** Air-conditioning 2
- **EM443** Refrigeration 1
- **EM444** Refrigeration 2
- **EM451** Project Work

Any three of the following subjects, including at least one of **ME551**, **ME552** and **BS599**.

- **EM441** Air-conditioning 1
- **EM442** Air-conditioning 2
- **EM443** Refrigeration 1
- **EM444** Refrigeration 2
- **EM451** Project Work

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. The subjects are:

- **EM506** Maintenance Planning and Control
- **EM507** Maintenance Engineering 1
- **EM508** Maintenance Engineering 2
- **EM509** Materials and Processes

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 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.
Engineering subject details

This section contains a brief description of the various subjects in all engineering degree courses, the diploma course in building surveying, the associate diploma course in production engineering 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>Applied Science 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>Manufacturing Engineering</td>
</tr>
<tr>
<td>EE</td>
<td>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>LG</td>
<td>Engineering Faculty</td>
</tr>
<tr>
<td>EM</td>
<td>Mechanical Engineering</td>
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<tr>
<td>EP</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
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<td>MP</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>MT</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>SA</td>
<td>Applied Science Faculty</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
</tr>
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<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>

AT194 Thinking and Communicating

Two hours per week for two semesters
Assessment is continuous

A first-year subject in all degree courses in engineering, designed to develop students' skills in communicating through the spoken and written word. Students are expected to master basic thinking processes used in the engineering profession. Creative thinking and decision-making as they relate to engineering also form a part of the process of developing communicating skills. A segment of the subject matter is concerned with the development of personal and social awareness, as part of the communicative process.

Recommended reading

AT195 Communications 1

Two hours per week for two semesters

A first-year subject in the diploma course in building surveying which introduces students to techniques for improving confidence in oral and written communication.

The main emphasis is on oral and written communications in the following areas:
- Relating to the public: use of telephones, clear explanations and descriptions, public speaking; Written reports such as commentaries on the Uniform Building Regulations, press statements.
- Work relations: use of recording devices, job interviews, technical reports and their presentation, business letters, cataloguing and maintaining files.
- Peer group relating: sharing points of view, conduct of meetings.
- Language and social context. Committee reports.

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 behaviour and modifying existing behaviour. 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 which introduces students to aspects of intra and interpersonal processes and to provide practical behavioural skills in social interaction.

This subject has been designed to integrate with administration subjects. Overview: introduction to behaviour in its social context. Socialisation: transmission of cultural values and stereotypes. Non-verbal communication and social order. Bias, prejudice and creativity. Assertiveness training: increasing the ability to give clear unambiguous messages and reduction in communication binds. Motivation and emotions. Stress: practical skills in stress management and the creative use of conflict.

AT396 Communications 2

Two hours per week for one semester

A third-year subject in the diploma course in building surveying, which develops further skills in specific areas of communication relevant to building surveyors.

Oral and written work in the following areas:
- Relating to the public.
- Work relations: technical and descriptive reports and their interpretation, work diaries, reports to councils, job applications.
- Peer group relating: working with committees, minutes of meetings, conduct of meetings.

AT691 Urban Sociology

Three hours per week for one semester
Assessment is continuous

A subject in the graduate diploma course in urban systems.

This seminar program involves an introduction to sociological concepts, particularly theory of social stratification. Emphasis is on the relationships between social structure and aspects of inequality in Australian cities. There is also discussion of the relevance of social science to some areas of public policy, e.g., poverty, housing, transport.
AT692 Energy Policy Formation
Two hours per week for one semester
Assessment is continuous
A subject in the graduate diploma course in energy systems which presents the factors involved in the formation and implementation of public policy in Australia, with particular emphasis on the development of national and state policies on energy. This is achieved through a study of the process of policy formation, and the powers and responsibilities of all levels of government. The rights of individuals and special interest groups are considered in the context of policy-making in a democratic society. Students are encouraged to pursue their studies through case studies related to lectures and tutorial material, with the purpose of developing an awareness of policy formation and its social impact. Where appropriate, policies are discussed in the world context.

Recommended reading

AT792 Applied Psychology
Three hours per week for one semester
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 models 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
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; Preservation of programs in one idiom originally designed for another; Humour — and what constitutes national humour.

AT794 Sociology
Three hours per week for one semester
A general elective subject in all degree courses in engineering which is a general introduction to sociology aimed at providing the student with the tools to examine society in cross-section and over a period of time. It is a study of social structure and social action. This analysis of Australian society along with relevant comparisons made with other societies provides the student with a useful set of concepts and the appropriate terminology.

Recommended reading
De Fleur, D’Antonio W., and DeFleur L.B. Sociology: Man in Society. 2nd edn, Glenview II, Scott Foresman 1972

AT795 Law in Society
Three hours per week for one semester
A general elective subject in all degree courses in engineering which explores the relationship between the law and 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. As a preliminary to the understanding of 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.

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 the concept of law and the role 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 role of business law. The doctrine of precedent.


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 demand analysis and forecasting; cost and output relationships; firms’ objectives and pricing strategies; investment analysis; the structure of the Australian economy and the influence of government on economic activity.

References
Davies, J.R. and Hughes, S. Managerial Economics. Plymouth: McDonald and Evans, 1977

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 of planning and decision-making.
Feasibility studies: analysis of the financial practicability of proposed development projects.

BS399 Administration 1
Three hours per week for one semester
A third-year subject in the diploma course in building surveying, which introduces students to organisation and management theory and to 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.
A general elective subject in all degree courses in engineering, designed to introduce students to the study of law. Firstly, to give students a general insight into an alternative discipline or field of learning, and secondly to provide students with an appreciation of the legal, social and ethical framework within which the profession operates. In pursuit of the first 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, attention is paid to one or more of the following matters relevant to practice:

(a) contracts for the provision of engineering services by practitioners 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 referred to during tuition in this unit.

4 general elective subject in all degree courses in engineering. No prior knowledge of economics is assumed. 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 covered are drawn from: markets and resource allocation; demand, production and costs; prices and profits; industry economics; aggregate economic analysis; money and economic activity; employment and unemployment; inflation; macroeconomic policies.
BS661  Urban Economics
Three hours per week for one semester

A subject in the graduate diploma course in urban systems

Topics covered will include: macro-economics and micro-economics; supply and demand theory; urban location and urban growth theory; cost-benefit analysis applied to urban problems; transport economics and environmental economics; fiscal problems of urban government and urban renewal.

References

BS762  Transport Economics
Three hours per week for one semester

A subject in the graduate diploma course in transportation systems.

Topics covered will include the following: economic analysis and the transport sector; determinants and characteristics of the demand for transport infrastructure and services; the cost of supplying transport services; private and social costs; the economics of transport pricing; the rationale of transport regulation; public versus public passenger transport, road versus rail freight transport etc. techniques for the economic evaluation of transport projects (cost-benefit analysis, cost-effectiveness, goals achievements matrix, planning balance sheet); case studies in project analysis.

References
Frankena, M.W. Urban Transport Economics. Sydney, Butterworths, 1979

CE101  Civil Engineering Elective — Structures
Two hours per week for one semester

An elective subject in the first year of all engineering degree courses which introduces students to concepts of structural behaviour in natural and man-made assemblages using a non-mathematical approach.

CE111  Applied Mechanics
Three hours per week, for two semesters

A first-year subject in all degree courses in engineering, which develops in students an understanding of the basic principles of statics and dynamics and extends these concepts to the behaviour of loaded members and simple systems.

Basic concepts: kinematics, dynamics, loads, equilibrium, internal forces, superposition, energy, power, friction, stress and strain.

Performance of loaded members: statically determinate tension members, beams, long and short columns, circular shafts, simple connections.

Kinematic and loaded performance levers, screws, belts and chains.

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 viscous 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.

CE171  Building Practice
Three hours per week for two semesters

A first-year subject in the diploma course in building surveying, designed to provide students with practical experience in the various trades and practices used in the construction industry.

Practical work in: carpentry and joinery, welding, plumbing, brickwork and masonry, electrical trades, fabrication and construction techniques in timber, concrete and steel.

CE172  Building Structures 1
Four hours per week for two semesters

A first-year subject in the diploma course in building surveying, intended to develop in students an understanding of the 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 residential 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, joinery, 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 structural 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:

Biennial loading, principal stresses, Mohr's circle for stress and strain, relationships between stress and strain. Saint Venant's principle and stress concentrations.

Performance of loaded members:

Torsion: elastic and inelastic stresses and deformations for circular and thin-walled closed-tube sections. Bending: internal actions, flexural stresses, shear centre, skew bending, composite sections, inelastic bending, beam deflections (DE, moment area, virtual work).

Columns: short columns, long columns (Felder and scant equations).

Statically determinate 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 appreciate the action of structural components and to complete structures and to introduce students to methods of analysis available to designers.

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 level types, 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 understanding of the action of structural components and complete structures and to introduce students to methods of analysis available to designers.

CE253 Structural Design 2

Six hours per week for one semester

A subject in the second year of the degree course in civil engineering which introduces students to civil engineering which develops in students an understanding of the action of structural components and 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

Traffic engineering basics studies and surveys, traffic control devices, principles of interaction design.

Design of roads and streets: cross-section, grading and crossfall, vertical and horizontal curves, drainage, erosion control.

Stabilisation: mechanical, lime, cement and bituminous stabilisation of the various soil types.

Earthworks: embankment and cutting, lead and haul, mass diagram, balancing of earthwork, compaction, field determination and control of densities, brief treatment of types and uses of earthmoving equipment.

Roadmaking: materials: roadstones, quarrying and crushing methods, sources, production, types and uses of bituminous materials, bituminous treatments.

Introduction to transportation engineering.

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 civil engineering aspects of transportation. Upon completion of the subject students will have gained a broad understanding of the road system and the technology of the civil engineering aspects of the other modes.

Traffic engineering: basics studies and surveys, traffic control devices, principles of interaction design.

Design of roads and streets: cross-section, grading and crossfall, vertical and horizontal curves, drainage, erosion control.

Stabilisation: mechanical, lime, cement and bituminous stabilisation of the various soil types.

Earthworks: embankment and cutting, lead and haul, mass diagram, balancing of earthwork, compaction, field determination and control of densities, brief treatment of types and uses of earthmoving equipment.

Roadmaking: materials: roadstones, quarrying and crushing methods, sources, production, types and uses of bituminous materials, bituminous treatments.

Introduction to transportation engineering.

CE251 Scaffolding

Four 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 Act and the regulations 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, and single-storey, wide span structures with framed or load-bearing walls.

Structural systems: basic design, structural materials used for buildings up to three storeys. Foundations, footings. Fire protection. Framed buildings: materials, columns, trusses, portal frames, space frames.


Drawing office work: drawings of details and structures relevant to the above topics.

Written reports on selected topics requiring collection of data and library research will form part of the assessment.
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 chemistry. Soil hydraulics including permeability and flow nets; shear strength of sands and clays, Mohr's circle, direct shear and triaxial shear testing; earth pressure including active, passive and at rest, rigid and flexible walls.

CE282 Geomechanics 1
Four hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to provide a building surveyor with the necessary knowledge of geomechanics to enable him to perform his duties of inspection and approval of foundations and other earth works, properly.

Types of soil and rock.

CE292 Statutory Control 1
Two hours per week for two semesters
A second-year subject in the diploma course in building surveying, designed to provide students with an understanding of the administrative procedures and principles which apply to a building surveyor's duties.

Administration and law: local government structure and operation, the role and functions of the building surveyor, powers of entry, appeals, prosecutions, various standards and regulations. Regulatory control and inspectorial procedures for a range of building types.

CE311 Structural Mechanics
Three hours per week for one semester
A subject in the third year of the degree course in civil engineering which aims to develop students' skills in the elastic analysis of statically indeterminate structures. Statically indeterminate structures: elastic analysis of forces and deflections (virtual work, strain energy, moment distribution); approximate analysis. Matrix analysis of structures: introduction to force and displacement methods. Elastic stability: fundamentals; stability of members (columns, lateral buckling of beams, beam-columns): trained structures.

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 or urban settlements, sociological effects of the built environment. Administration of planning schemes. Residential planning standards. Basic surveys of planning, the use of remote sensing in urban planning. Introduction to data bases for planning purposes.

CE331 Water Engineering
Three hours per week for one semester
A subject 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 components of these systems.


CE341 Surveying
Five hours per week for one semester
A subject in the third year of the degree course in civil engineering which extends basic survey theory and shows how surveying is used in engineering projects.

Control survey: 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 surveys, introduction to cadastral surveying; conventional and EDM techniques for the production of detail plans, volume measurement and computation. Practical work.

CE351 Structural Design
Three hours per week for one semester
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 gives students practice in the application of these principles.

Design theory (4.5 hours)
Design principles: planning and choice of structural type; stability, rigidity, economic considerations. Concrete: material properties, mix design; design in reinforced concrete and prestressed concrete: structural brickwork.

Design practice (45 hours)
Design practice exercises in reinforced and prestressed concrete structural design. Computer programs are used to assist the design process where appropriate.
CE352 Structural Design 2

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

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 elements making up the road system. Upon completion of the subject students are able to quantify many of these elements, e.g. highway and intersection capacities, vehicular headway distributions, and will have a greater knowledge concerning the various means of regulating, controlling and guiding traffic.

Administration of Australian roads and highways. Highway and intersection capacity; uninterrupted flow, levels of service, applications, interrupted flow, i.e. intersections. Traffic studies, speed studies, volume studies, parking studies, urban and rural parking, traffic accidents, causes and means of prevention, accident records; before and after studies, statistical tests and significance. Traffic signals, types and control. Miller formula, co-ordination and co-ordinated control. Traffic signs and road furniture: traffic signs, pavement markings, guide posts, guard fencing, etc.

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 admixtures 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

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.


Written reports on selected topics requiring collection of data and library research will form part of the assessment.

CE392 Statutory Control 2

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 building surveyor.

Relevant acts, regulations and codes and related documentation will be emphasised.

CE442 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: preparations 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 Bays Reports)

CE451 Structural Design
Six hours per week for one semester
Three hours per week for two semesters for part-time students (CE453)
A subject in the fourth year of the degree course in civil engineering which extends students' knowledge of the principles of structural design in steel and timber and gives students practice in the application of these principles.

CE452 Structural Design 3
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to familiarize 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
A final-year subject in the diploma course in building surveying, designed to extend students' knowledge of building and associated processes.
Special types of structures: principles of structural action, methods of construction for shells, folded plate structures, tension structures, high-rise post-tensioned structures, etc.
Pre-cast and pre-fabricated structures.
Demolition regulations, methods, equipment, shoring, design for demolition, problems with pre-stressed buildings.
Excavation practice: methods, equipment, rock excavation, trenching.
Crane and lifting appliances.
Hydrology, surface and subsurface drainage: elements of hydrology, applications to roof and site drainage.
Groundwater.
Practical work: drawings and sketches of relevant structural details, site visits, collection of technical information.

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
A final-year subject in the diploma course in building surveying, designed to extend students' knowledge further in the area of geomechanics.
Compaction: compaction process, compaction plant, control of filled sites.
Foundation: bearing capacity, settlement, footing design with particular emphasis on residential and light industrial foundations.
Excavations and underpinning.
Site investigations: methods, reports and their interpretation.
Approval of foundations. Regulations. Responsibilities of various parties.

CE492 Building Law and Contracts
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, which provides building surveyors with a suitable legal background for the proper discharge of their duties.

C551 Investigation Project
Six hours per week for one semester
(Three hours per week for two semesters for part-time students as C552)
A subject in the fifth year of the degree course in civil engineering which develops students' initiative and self-education skills through work on an investigation project chosen from some area of civil engineering.
Project: students will work individually or in small groups on selected problems under staff supervision. Each project will require a literature survey and a theoretical and/or experimental investigation. Results and conclusions will be presented in a written report, and 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.
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 retarding basin design, reservoir yield analysis methods, ground-water flow, pressure surges in pipe systems, river engineering, ocean engineering.  
Emphasis is on the use of computers in analysis of problems.

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.

CE551 Civil Design  
Six hours per week for one semester  
(Three hours per week for two semesters for part-time students as CE553)  
A subject in the fifth year of the degree course in civil engineering which develops students’ ability to apply theoretical knowledge to practical design situations.  
A range of designs chosen from structural and non-structural areas, including elective choices in areas of interest. Assignments which require creative solutions will be included. Answers to be in the form of written reports, design computations, drawings and models, as appropriate.

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.

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.  
Civil engineering works: fundamental principles, construction methods, cost.  
Building works: fundamental principles, construction methods, cost.  
Industrial complex construction: multidiscipline construction.  
Marine structures and off-shore works: fundamental principles, construction methods, cost.

CE572 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 engineer-ing further aspects of engineering geology.

CE591 Professional Practices  
Four hours per week for one semester  
A subject in the fifth year of the degree course in civil engineering which introduces students to engineer-ing management practice; makes students aware of the place of the engineer in society and introduces engineering economics to students.  
The engineer and society: professional ethics, the role of the engineer in society, the effect of human activity on the environment.  
Contracts: initiation of projects, feasibility studies, general conditions, forms of contract, legal elements of a contract, contract documentation, contract law, termination of contracts, contract administration, including preselection of contractors, site supervision procedures, subcontractors, partial and final certificates, disputes, arbitration.  
Economics: cost-benefit analysis, cash-flow forecasting, discounted cash-flow method, present worth criteria, welfare economics, social and private opportunity costs, case studies.  
Civil engineering management: CPM estimating, cash-flow forecasting, strategic planning.  
Organising: personnel, plant, materials, labour, subcontracts.  
Leading: motivation, leadership, delegation of authority, time management.  
Controlling: cost reporting, management failures.  
Report writing: engineer-ing technical reports, oral presentation of an engineering report, conduct of technical sessions. (This section will be integrated with other subjects in final year, for which technical reports are required.)

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 (223 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 1/2 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.

CE611 Structural Mechanics
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering. A selection of topics in the field of: statically indeterminate structural analysis, influence lines, model analysis, moment distribution for complex structures, secondary stress analysis; elastic stress analysis; elastic stability of beams, columns and frames, matrix methods of analysis; theory of plates and shells; basic plasticity.

References
To be advised by the lecturer

CE621 Urban Systems 1
Three hours per week for two semesters
A subject in the graduate diploma course in urban systems Planning history, planning law, basic planning theory, neighbourhood planning, systems planning, planning data collection, regional planning, remote sensing.

References
Branch, M.C. City Planning and Aerial Information Cambridge, Mass., Harvard University Press, 1971
Chapin, F.S. Urban Land Use Planning. 2nd edn, Urbana, University of Illinois Press, 1965

CE623 Town Planning
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering Planning practice, purpose of planning; basic surveys of planning; planning law; engineer-negotiated residential street design; traffic engineering surveys; statutory planning authorities involved in planning; transportation planning and use of model analysis; planning of airports, docks and harbours.

Reference

CE661 Environmental Planning
Three hours per week for one semester
A subject in the graduate diploma course in environmental planning To land-use planning; planner and transport planning; use of remote sensing techniques in transport planning; transport planning safety; sociological study of the transport problems within Australian cities; historical development of urban settlements; sociological effects of the built environment.

CE662 Transport Systems
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems which seeks to develop in students a greater understanding of the broad field of transportation systems. Topics contained in the course include: transportation planning; evolution of regional and area-wide transportation plans; characteristics of transportation supply and demand; measurement and analysis of demand; trip production and distribution models; principles of planning evaluation, selection, adoption, financing, and implementation of alternative urban transportation systems; urban development models; community goals and objectives; Inventory of existing conditions; continuation planning.

CE663 Traffic Engineering Practices
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems with an essentially practical emphasis. Topics covered in any year will include: traffic studies, surveys and measurements; human factor studies; traffic management and regulation; traffic control devices; parking studies; accident studies; safety standards; administration of public traffic systems; public relations; systems approach to the safe and expeditious movement of road traffic; volume, speed, density, and headway relationships for traffic streams; gap, delay and vehicle absorption theory.

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.

CE681 Geology
Three hours per week for two semesters
An elective subject in the graduate diploma course in civil engineering.


References
Blyth, F. G. H. and de Freitas, M. A. A Geology for Engineers 6th edn, Lond., Arnold, 1974

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 organization; site office procedures, contractor/principal relations; arbitration; company structures, man management, negotiation; arbitration and conciliation.

CE692 Communications
Four hours per week for one semester
A subject in the graduate diploma course in civil engineering construction. The theory and practice of communication. Students take part in a program designed to increase their personal capacities to understand and communicate well at different levels of oral and written communication, particularly as project managers in the construction industry. To this end various techniques are used and evaluated by the group. The course also includes a brief study of the historical role of the engineer in the development of human communications, placing the profession in its social context. The purpose of the course is to enable the engineer to evaluate professional problems more competently and to communicate ideas more effectively.
CE693  Powers and Duties of Local Government Engineers

Three hours per week for two semesters

A subject in the graduate diploma course in civil engineering.


Section B: contracts, conduct of an engineering office, conduct of construction and maintenance works; engineering economics and management.

References
To be given by lecturer.

CE721  Urban Systems

Three hours per week for two semesters

A subject in the graduate diploma course in urban systems.

Government, planning and the law; statutory planning; planning appeals procedure.

Systems planning: plan formulation and planning evaluation; urban gaming simulation; systems planning exercises.

References
Town and Country Planning Act, Victoria, Laws, Statutes, 1961
Urban Renewal Act, Victoria, Laws, Statutes, 1970

CE722  Environmental Systems Management

Two hours per week for one semester

A subject in the graduate diploma course in urban systems.

Ecology; management of ecological systems, environmental impact statement; conservation planning; solid waste management and recycling; water supply and waste disposal, public health engineering.

References
Masters, C.M. Introduction to Environmental Science and Technology, N.Y., Wiley, 1974

CE723  Urban Transport

Three hours per week for one semester

A subject in the graduate diploma course in urban systems.

Transport and land-use planning; new transport systems, traffic engineering and management, freeways, parking studies.

References
Analysis of Urban Development. Melbourne, Department of Civil Engineering, University of Melbourne, 1970
Tewkesbury Symposium University of Melbourne, 1970

CE731  Hydraulics and Public Health Engineering

Three hours per week for two semesters

A subject in the graduate diploma course in civil engineering.

Hydraulics: advanced hydrology, flood routing, evapotranspiration and runoff, ground water hydraulics; advanced hydraulics, urban water supply, pipe systems and pumps, water hammer, open channel flow, sediment transportation, ocean engineering.

Public health engineering: water quality, tests for water quality, methods of treatment; disposal of waste water, standards, measurement of pollution load, biological decay processes; disposal of solid wastes, methods, system approach, recycling; air pollution sources, tests, effects, standards; diffusion in rivers and estuaries; systems analysis of waste water treatment and disposal; ecological and economic constraints; case studies and laboratory work.

An important aim of the course is to prepare students for the Municipal Engineer’s examination for the State of Victoria (held in August each year) and the Engineer of Water Supply examinations (held in October).

References
To be given by lecturers.

Water and Sewerage Districts Act, 1958

CE751  Concrete Design and Construction

Three hours per week for two semesters

A subject in the graduate diploma course in civil engineering.

Reinforced and prestressed concrete materials, mix design, general design criteria, including function and flexibility requirement of structures, loading, fire rating, spans — prestressed, in situ; basic concepts, design for working strength, ultimate strength for reinforced concrete and prestressed concrete and limit states; construction details and practical work.

References
Warner, R.F. and Faulkner, K.A. Prestressed Concrete, Carlton, Vic., 1979

CE752  Design of Steel Structures

Three hours per week for two semesters

A subject in the graduate diploma course in civil engineering.

Steel properties; permissible stress design of structural elements including plate girder, beam-columns, base-plates, connections; plastic design of continuous beams, beam-columns, frames; connection between rotation capacity requirements and spacing of lateral restraints; stability in low-rise buildings; tension H beams; box columns, reduction H load-carrying capacity of structures at collapse; plastic moment, distribution, shakedown and incremental collapse; welding — metallurgy, costing and inspection.

CE761  Municipal and Highway Engineering

Three hours per week for two semesters

A subject in the graduate diploma course in civil engineering.

Vertical and horizontal alignment of roads; design of urban road schemes, highway drainage, road construction and maintenance; highway engineering materials, traffic engineering, traffic signs and signals.

An important aim of the course is to prepare students for the Municipal Engineer’s examination for the State of Victoria (held in August of each year).
CE762 Public Transport Systems
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems
Urban passenger transport: technological and operating characteristics of the modes including vehicles, way, loading points, speed, headway, capacity, variation in demand, modal interchange, fares and ticket handling, staffing, finance management; priority for buses, trams, taxis and car pools; proposals for new types of transport; inter-city passenger transport — comparison between modes.

CE763 Freight Transport Operations
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems.
Physical distribution of commodities, urban goods movement, fixed route transport, bulk granular freight handling, perishable goods handling, general packaged goods handling; technological and operating characteristics of the modes, storage, transit time, rates, ownership of the carrier, organisation, management.

CE764 Urban Design
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems.
Students will be concerned with the physical form of the city, its analysis, design, social and economic effects on decisions of design. In particular we will look at local centres, design for recreation areas, transport systems, city streets and arcades, interaction between pedestrians and transport.

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 lectures.

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.

CE821 Urban Systems 3
Three hours per week for two semesters
A subject in the graduate diploma course in urban systems
Lectures, tutorials and seminars are held on a wide range of topics related to the multi-disciplinary nature of urban systems. The topics are designed to enhance the welfare of the local community.

CE822 Urban Design
Three hours per week for two semesters
A subject in the graduate diploma course in urban systems
Students observe the physical form of the city, its analysis, design, social and economic effects on decisions of design. In particular they look at the different functions, issues and design problems, analysis of local centres, design for recreation areas — transport systems, city streets and arcades, interaction between pedestrians and transport, institutions and their districts.

Electives in Urban Systems
Three hours per week for two semesters
The following subjects are electives in the graduate diploma course in urban systems:

CE823 Urban Transport Systems
CE824 Systems Planning
CE825 Environmental Engineering
CE826 Urban Energy Systems
CE871 Urban Sociology
CE861 Urban Economics

Subjects will only run if there is sufficient student demand. Fifty per cent of the allocated time is spent on projects and the other fifty per cent in attendance at lectures to be given by specialists in various fields.

Syllabus details will be presented in the first lecture.

References
To be given by lecturer.

CE851 Design Projects
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.
This subject is intended for students undertaking the full graduate diploma course, and includes suitable projects based on contents of structures, hydraulics, municipal surveying and highway courses.

References

CE861 Transport Legislation
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems
Statutory planning, planning appeals, preparation and amending planning schemes, federal transport bodies, planning Acts, RSTA Act, Local Government Act, CRB Act and other relevant bodies.

CE863 Project: Case Study of Transportation Problem
Six hours per week for one semester
A subject in the graduate diploma course in transportation systems.

CE881 Soil Mechanics
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering
Design of foundations: shallow and deep; earth pressure probl ms, braced excavations, tieback walls and soil anchors; introduction to soil vibrational theory, site investigations, planning, sampling, in situ testing; introduction to rock mechanics; selected topics in soil engineering: laboratory work and tutorials.

References
EA201  Chemical Engineering 1A
Three hours per week for two semesters
Assessment by three-hour examination at the end of each semester


Textbook

Recommended reading

EA202  Chemical Engineering Thermodynamics and Kinetics
Three hours per week for two semesters
Assessment by three-hour examination at the end of each semester

A subject in the graduate diploma course in chemical engineering. First law of thermodynamics, ideal gas law, equations of state, principle of corresponding states, compressibility, fugacity, enthalpy deviation and entropy deviation charts, physical equilibrium: bubble point and dew point relations, colligative properties, single component properties and phase diagrams, refrigeration, engines, thermodynamic process analysis, activity, activity coefficients, thermodynamic consistency tests and integrated forms of the Gibbs-Duhem equation, computer procedures to Gibbs-Duhem equation, treatment of experimental data. Chemical reaction equilibria, concentration, temperature and pressure dependence of the rate of reaction, experimental methods of determination of reaction rate constants, batch, plug flow and flow reactor analysis, reaction networks, non-ideal flow in reactors, fluid-particle reactions, fluid-fluid reactions, asymptotic solutions, adsorption and catalysis. Laboratory experiments cover representative examples in both thermodynamics and reactor design areas

Textbooks

Recommended reading

EA211  Chemical Engineering 1B
Three hours per week for two semesters, which includes one hour per week of problem solving throughout the course, and one hour per week of practical work in the second semester
Assessment by examination

A subject in the graduate diploma course in chemical engineering dealing in depth with momentum and heat transfer, and the elements of boundary layer theory. Fans, pumps, valves, pipes and heat exchangers are discussed. By consideration of the analogies between heat and momentum transfer, mass transfer is introduced prior to the students undertaking EA312/3/4.

Textbook

Recommended reading

EA311  Chemical Engineering 2A
Three hours per week for two semesters

A subject in the graduate diploma course in chemical engineering. Particle dynamics; motion of particles in fluids; filtration; fluidisation; flotation; pneumatic and hydraulic conveying; crushing, grinding, screening; mixing; electrostatic separation; gas and hydraulic cyclones.

Recommended reading

EA312  Chemical Engineering 2B
Three hours per week for two semesters

A subject in the graduate diploma course in chemical engineering. Theory of diffusion; Fick diffusion equation; diffusion coefficient; gas/solid/liquid interphase diffusion. Film and overall coefficients; gas absorption — packed towers, HTU and NTU; wetted wall and disc columns; flooding and lower diameter; penetration theory; absorption with chemical reaction; humidification and water cooling; cooling tower, drying; liquid-liquid extraction; solid-liquid extraction; crystallisation.

Recommended reading
Bennett, D.G. and Myers, J.E. Momentum, Heat and Mass Transfer. 2nd edn, N.Y., McGraw-Hill, 1974

EA313/314  Chemical Engineering 2C
Three hours per week for two semesters

A subject in the graduate diploma course in chemical engineering. Separation processes; co-current, counter current and cascade distillation; McCabe-Thiele, Lewis Sorel, Ponchon-Savarit methods, batch and continuous operation; two component and multi-component distillation, solvent extraction; absorption, ion exchange and absorption. Duhing and Cox charts; boiling point elevation; boiling heat transfer; Coulson and Mcmillan correlation for tubular
evaporators; evaporation single and multi-effect; thermal and mechanical recompensation; economics.

Recommended reading
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

EA411 Non-Newtonian Heat, Mass and Momentum Transfer
Three hours per week for two semesters (including practical work)
Assessment by examination
A subject in the graduate diploma course in biochemical engineering which is intended to give students a thorough grounding in the engineering design aspects of the flow of non-Newtonian fluids.
A review of Newtonian fluid flow, heat transfer and mixing (up to and including solutions to relevant equations of motion), precedes the work on non-Newtonian flow, viscometry, heat transfer and mixing. The final aspect of the subject is the application of this work to some practical situations such as heat sterilisation.

Recommended reading

EA491 Biochemical Engineering
Three hours per week (including practical work) for two semesters
Assessment by examination
A subject in the graduate diploma course in biochemical engineering. Requirements for growth in biological material; variations in micro-organisms; fermentation pathways. Enzyme reaction kinetics and absolute reaction rate theory; continuous fermentation, aeration and agitation. Mass transfer theories. Bubble and mechanical aeration; scale up; operation and control. Biological waste treatment – BOD, COD. Mathematical modelling for the design of activated sludge plants, trickling filters and sludge digesters. Nitrification-denitrification and river modelling.

Recommended reading
Blakeborough, N. Biochemical and Biological Engineering Vols 1 and 2, Lond., Academic Press, 1967-68
McAdie and Eddy, Inc. Wastewater Engineering: Collection, Treatment, Disposal N.Y., McGraw Hill, 1972

EE139 Engineering Principles: Electricity
Two hours per week for two semesters
A first-year subject in the associate diploma course in production engineering in which essentially descriptive: graphic and trigonometric methods are used to introduce topics such as energy conversion, circuit laws, electromagnetism, electrical measurements.

EE183 Electrical Circuits and Devices
Two hours per week for two semesters
A first-year subject in all engineering degree courses.


Reference

EE186 Electrical Engineering Elective
Two hours per week for one semester
A mainly laboratory-based elective subject in the first year of all engineering degree courses, to introduce the following topics.
Digital systems, combinational and sequential logic circuits, non-linear networks, transformers, rectifiers, regulators, DC power supply circuits, DC machines, AC machines, operational amplifiers, student project.

Reference

EE257 Electrical Design
Three hours per week for two semesters
A second-year subject in the degree course in electrical engineering. Philosophy of design: processes, optimisation, economic, human and social factors.
Electrical engineering material and properties: heating, cooling and ventilation. Thermal design of simple devices. Direct current windings and solenoids: space factor, temperature rise, design of coils.
Field mapping: methods used. Design assignments and laboratory projects.

References
Say, M.G. Alternating Current Machines. Lond., Pitman, 1976
Comer, P.J. Modern Electronic Circuit Design Reading, Mass. Addison-Wesley, 1976

EE281 Electrical Measurements
Two hours per week for one semester
Measurement of circuit variables: moving iron, rectifier and p.m.m.c., dynamometer ammeter, dynamometer wattmeter, thermocouple, electronic voltmeter, direct diometer, oscilloscope and energy meters; polyphase power measurement; current and potential transformer, instrument loading.
Measurement of circuit parameters: models of circuit elements; resistance measurements. DC/AC bridges, impedance meter, time and frequency measurements.
Electronic standards: international and laboratory standards; standards of potential, capacitance and resistance, DC and AC potentiometers.

References
Gregory, B.A. An Introduction to Electronic Instrumentation Lond., Macmillan, 1972
Harris, F.M. Electrical Measurements N.Y., Wiley, 1966
Communication Principles
Three hours per week for one semester
A second-year subject in the degree course in electrical 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.

References
The Open University Telecommunications Course Team, Telecommunications Systems - Unit 2 Modulation, Milton Keynes, Open University Press, 1976

Electrical Circuits and Fields
Four hours per week for two semesters
A second-year subject in the degree course in electrical engineering.
Circuit elements, linear and non-linear.
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, polariation, displacement current, fields in electrostatic systems.
Natural response of circuits: first and second order circuits: classical and Laplace methods.
Two part networks: parameters and interconnections.
Non-sinusoidal waveforms: Fourier analysis.
Network topology.
Electromagnetic fields: conduction, resistivity, current density and electric field in conductors, magnetic induction, magnetic flux and flux linkage, Ampere law, Stokes theorem, magnetic field intensity, mutual and self inductance, calculation of Inductance, energy and forces in magnetostatic systems.
Analogous systems, analogies between electrical, mechanical, incompressible fluid and thermal systems.

References

Electronic Circuits and Devices
Two hours per week for two semesters
A second-year subject in the degree course in manufacturing engineering.
Modern devices: operational amplifiers, operation and applications.
Analogue and digital integrated circuits: AID, D/A, converters, logic gates, binary arithmetic, combinational and sequential logic.
Counters, shift registers, clocks, flip flops, arithmetic units.
Applications.
Introduction to microprocessors: programing.
Overview of transducers: interpretation of output data classroom demonstrations and practical work.

Reference

Electromagnetic Devices
Three hours per week for two semesters
A second-year subject in the degree course in electrical engineering.

References

Electronics
Four hours per week for two semesters
A second-year subject in the degree course in electrical engineering.
Semiconductor theory, P-N junction theory, P-N junction diode and its applications, bipolar junction transistor theory, combinational and sequential digital logic, BJT non-linear applications, amplifiers, BJT linear applications, field effect transistors, integrated circuits, negative feedback, operational amplifiers, oscillation.

References

Environmental Engineering
One hour per week for one semester
A second-year subject in the degree course in electrical engineering.
Biological cycles of plants and animals. Pollution; measurements and measuring equipment, air pollution and gas cleaning methods, treatment of liquid effluents, electropolating wastes, nuclear plant wastes, fuel cells and batteries, recycling of materials.

Electronics in Horticulture
Three hours per week for ten weeks
A subject conducted for students from Burnley Horticultural College.

Applied Electricity
Two hours per week for two semesters
A third-year subject in the associate diploma course in production engineering.
Review of alternating current circuits, phasor circuit analysis and frequency response. Introduction to Fourier and signal spectra.
Amplifiers: large signal, small signal, operational amplifier.
Digital circuit elements: switches, gates and memory elements.
Basic principles of A.M and F.M modulation.
Analogue measuring instruments: moving iron, moving coil and thermocouple instruments. Uses and limitations.
Electrical transducers: principles and applications.
Digital measuring devices: counters, voltmeters, arithmetic units.
Electronic machines: introduction to three-phase networks, star and delta connections, AC machine principles, types of AC machines, DC machines, Transformers, Safety and earthing.

References
EE357  Electrical Design  
Three hours per week for one semester  
A third-year subject in the degree course in electrical engineering.  
Computer-aided design: DC, transient and frequency analysis of  
networks by computer, device modelling, sensitivity analysis,  
optimisation techniques.  
Quality control: control charts, sampling inspection schemes.  
Reliability: probabilistic reliability theory, designing for reliability.  
Human engineering: anthropometry, man-machine compatibility and  
interaction.  
Project work involving design, testing, and presentation of results in  
class seminars, and written reports. Technical report writing.  
References  
Calahan, D.A. Computer-Aided Network Design. 2nd edn, N.Y.,  
McGraw-Hill, 1972  
Gottfried, B.S. and Weissman, J. Introduction to Optimization Theory.  
Grant, E.L. and Leavenworth, R.S. Statistical Quality Control. 4th edn,  
N.Y., McGraw-Hill, 1972  
McCormick, E.J. Human Factors Engineering. 3rd edn, N.Y., McGraw-  
Hill, 1970  
N.Y., McGraw-Hill, 1968  
Selected Australian, British, DEF  
and MIL Standards  
EE387  Electronics and Communications  
Five hours per week for one semester  
A third-year subject in the degree course in electrical engineering.  
Analogue electronics including operational amplifiers, D/A, A/D  
conversion, data acquisition.  
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  
[Borfe, D.G.] Digital Computer Fundamentals. 4th edn, N.Y., McGraw-  
Hill, 1977  
Smill, G. Telecommunication Systems. Units 5 and 6, Milton, Keynes,  
The Open University, 1976  
EE389  Linear Control Systems  
Four hours per week for one semester  
A third-year subject in the degree course in electrical engineering.  
Introduction to systems and control concepts. The effect of feedback.  
Formulation of system equations. Solution of differential equations.  
The Laplace transform and the complex frequency variable. Analogue  
computing. System representation: mathematical models, transfer  
functions, block diagrams, signal flow graphs. Graphical representation  
of system and relation to mathematical model. The 'S' plane and root  
loci. The frequency function, polar and Bode plots. System response,  
dynamic and steady state.  
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  
D’Arzo, J. and Houpis, C.H. Feedback Control System Analysis and  
Melso, J.L. and Schultz, D.G. Linear Control Systems N.Y., McGraw-  
Hill, 1969  
Olita, K. Modern Control Engineering. Englewood Cliffs, N.J.,  
Prentice-Hall, 1968  
Dransfield, P. Engineering Systems and Automatic Control. N.J.,  
Prentice-Hall, 1968  
Charlesworth, A.S. and Fletcher, J.R. Systematic Analogue Computer  
Programming. 2nd edn, Lond., Pitman, 1974  
EE405  Semi-conductor Electronics  
Four hours per week for one semester  
A subject in the graduate diploma course in digital electronics  
Semi-conductor physics, bipolar and field-effect transistors,  
technology and fabrication of silicon-integrated devices.  
Analogue Integrated circuits: operational amplifiers, voltage  
regulators, switching regulators, comparators, analogue switches,  
phase-locked loops, linear IC applications.  
Oscillators and timing: sinusoidal oscillators, crystal oscillators.  
Optoelectronics: liquid crystal and light-emitting diode displays, opto-  
couplers and isolators, fibre optics links.  
References  
Millman, J. and Halkias, C.C. Integrated Electronics. N.Y., McGraw-  
Hill, 1972  
Hewlett-Packard Optoelectronics Division Staff Optoelectronics  
Weber, S ed. Circuits for Electronics Engineers. N.Y., McGraw-Hill,  
1977  
EE383  Electromagnetic Fields  
Two hours per week for one semester  
A third-year subject in the degree course in electrical engineering.  
Static and quasi-static electric and magnetic fields, fields in  
materials; boundary conditions in dielectric, magnetic and conductive  
materials; solution 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 wave, wave impedance, phase and group velocity.  
Poynting theorem and Poynting vector, plane wave penetration  
in good conductors; reflection and refraction of plane waves at  
boundaries between 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  
Bradshaw, M.P. and Byatt, W.J. Introduction Engineering Field  
Plonsey, R. and Collins, R.E. Principles and Applications of  
Ramo, S. et al. Fields and Waves in Communication Electronics, N.Y.,  
Wiley, 1965  
Stevenson, W.D. Elements of Power System Analysis, N.Y., McGraw-  
Hill, 1975  
EE385  Electrical Power and Machines  
Five hours per week for one semester  
A third-year subject in the degree course in electrical 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 connection; 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  
Stevenson, W.D. Elements of Power System Analysis, 3rd edn, N.Y.,  
McGraw-Hill, 1976  
Sey, M.C. Alternating Current Machines 4th edn, Lond., Pitman,  
1976
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 microcomputer microprocessors.

References
Rowe, J. An Introduction to Digital Electronics. 3rd edn, Syd., Electronics Australia, 1978

EE407  Switching Circuit 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 Schmidt trigger. Switching speed: the factors limiting switching speed; methods of improving speed; saturating and non-saturating circuits. Basic logic gate 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. Input transducers: electrical 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 device memory; magnetic core and magnetic surface memory; magnetic bubble memory.

References

EE417  Electrical Technology
Two hours per week for one semester
A subject in the graduate diploma course in energy systems. Revision of AC circuits: single and three-phase power and energy concepts; analysis techniques in both the time and frequency domain. Magnetic circuits: terms, definition and concepts; materials; energy conversion storage and losses. Transformers: construction; circuit models; regulation, losses and efficiency. Rotating machines: basic principles; EMF, torque and speed relationships; losses and efficiency; induction machines; synchronous machines; DC machines; selection for particular applications. Rectifiers and inverters: general principles; types of converter; losses and efficiency; operating characteristics.

References
Thaler, G.J. and Wilcox, M.L. Electrical Machines. N.Y., Wiley, 1976

EE455  Electrical Design
Three hours per week for one semester

References
Say, M.G. The Performance and Design of AC Machines. 3rd edn, Lond., Pitman, 1958

EE457  Electronic Design
Three hours per week for one semester
A fourth-year subject in the electronics stream of the degree course in electrical engineering. Design techniques and case studies. Electromagnetic compatibility: interference sources and suppression, shielding, filtering and earthing practices, interference standards and measurements. Illumination engineering: principles of lighting quantities, luminance and illumination calculations, commercial and public lighting designs. Project work involving design, testing and presentation of results in class seminars and written reports. Technical report writing.

References

EE463  Circuits and Fields
Two hours per week for one semester
A fourth-year subject in both streams of the degree course in electrical engineering. Electromagnetics and magnetostatics: solution of bounded electrostatic field problems; review, methods of images, finite difference method. Calculation of two terminal capacitance. Magnetic vector potential Neumann’s formula. Calculation of self and mutual inductance, inductance and forces. Multiple conductor systems. partial and total

References

EE485 Electrical Power and Machines
Six hours per week for one semester
A fourth-year subject in the electrical power stream of the degree course in electrical 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.

Reference

EE486 Electronics and Communications
Four hours per week for one semester
A fourth-year subject in the electrical power stream of the degree course in electrical engineering.

Analog electronics: applications of operational amplifiers to signal processing, power amplifiers, power electronics devices and circuits Digital electronics: microprocessor and microcomputer stand-alone applications.

Communications: high frequency lines, line equations, quarter wave transformers, single and double stub matching. Microwaves — devices, waveguides and measurements.

References

EE487 Electronics and Communications
Six hours per week for one semester
A fourth-year subject in the electronics stream of the degree course in electrical engineering.

Analog electronics: wideband amplifiers, single stage and multiple stage amplifiers; power amplifiers; tuned amplifiers; Introduction to power electronics.

Digital electronics: introduction to sequential state machines; microprocessor; [C] hardware and software, memories, addressing, line drives and receivers.

Communications: coding theory: linear and cyclic codes, error detection and correction, practical coding and decoding algorithms. High frequency lines: review of line equations, quarter wave transformers, single and double stub matching.

Microwave communication: devices, waveguides, measurements.

References

EE488 Electrical Power and Machines
Four hours per week for one semester
A fourth-year subject in the electrical stream of the degree course in electrical engineering.

Network analysis: matrix methods; load flow studies, symmetrical faults.

Reference

EE489 Control Systems
Four hours per week for one semester
A fourth-year subject in both streams of the degree course in electrical engineering.


References

EE505 Integrated Circuit Components
Four hours per week for one semester
A subject in the graduate diploma course in digital electronics

Algorithmic state machines: definition of classes, symbols, conversion of functional specifications into ASM charts. Realization of ASMs with small scale, medium scale and large scale integrated circuit devices. Application of ASM techniques. Microprogrammed computer architecture, input slice microprocessor component5 and techniques. Linked ASMs and their relationship to interfacing methods for hardware and software modules.

References
Webel, S. Large and Medium Scale Integration Devices and Applications. N.Y., McGraw-Hill, 1974
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, busing, multiplexing, serial and parallel data transmission. The design of sequential-state machines and digital computer systems, the use and impact of microprocessor-based systems, and the use of 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.

EE515 Energy Utilisation and Conservation
Two hours per week for one semester
A subject in the graduate diploma course in energy systems
Energy distribution: overhead and underground systems; substations; reticulation in industrial plants and buildings; switchgear and protection; safety and earthing; AC-DC conversion; special power supplies; power factor correction; wave form correction; energy charges, design for minimum energy cost; load management for the consumer.

Electrical plant: motor drives; energy-efficient selection and use; motor control and protection; solid-state power supplies; noise in electrical machines; electric heating; electrical arc processes; electrolytic processes; cathodic protection; electric lighting; illumination design.

Heating, ventilating and air-conditioning: fan types; power and efficiency; ventilation requirements; heaters and heat exchangers; energy requirements as a function of building architecture; thermal insulation; introduction to air-conditioning plant; types of systems in current use; chillers; humidifiers; cooling towers; control systems. Total energy systems: combined process heating and power generation; waste heat recovery; integration of solar heating; centralised energy plant, reticulation systems for steam, hot and chilled water; selection and use of multi-purpose fuels; cycle efficiency; optimisation using system modelling techniques. Conversion of various energy sources: industrial and commercial. Human factors in plant design and operation: perceptual skills; anthropometric factors; control design; control/display; matching; operators as parts of closed-loop systems; safety and industrial health aspects.

Non-electrical power transmission: pneumatic systems; hydraulic systems; mechanical transmission equipment; efficiency and noise.

References
Say, M.C. Alternating Current Machines. Lond., Pitman, 1976

EE516 Energy Utilisation and Conservation
Two hours per week for one semester
A subject in the graduate diploma course in energy systems
Energy in transportation
Automotive power plants: spark ignition and compression ignition engines; factors affecting fuel economy; significance of engine maintenance, driving techniques and traffic control; gaseous and other fuels; unconventional power plants; battery electric vehicles; steam powered vehicles; hybrid vehicles.

Rail transportation: general requirements; for urban, rapid transit, heavy-haul and light rail systems; factors affecting operating economics; locomotive design; electric, diesel electric, diesel-hydraulic and gas-turbine power plants; steam-electric and other unconventional power plants; multiple-unit trains; light rail vehicles; aspects of electrified systems, advanced rapid transit and commuter systems.

Sea and air transportation: survey of ship and aircraft propulsion systems; propulsion efficiency; ground effect and hydrofoil transport.

Domestic applications
Domestic energy applications; factors in the choice of energy sources; low-grade solar energy for heating and cooling; thermal accumulators for domestic applications; wind power; battery storage systems; thermal insulation; home architecture for energy conservation.

Energy system overall analysis
Energy modelling, the economic and physical contribution from various sources and their interdependence; sensitivity studies related to the allocation of scarce resources with physical constraints.

References

EE517 Energy Transmission and Transportation
Two hours per week for one semester
A subject in the graduate diploma course in energy systems
Electrical transmission
Power system principles: generating stations; terminal stations; substations; urban and rural distribution; reliability of supply. Transmission lines: effect of length; voltage selection; conductor types and sizes; surge and insulation co-ordination; HVDC lines; converter stations; operating considerations: daily load curve, generation mix.
Power system analysis: load management, efficiency of energy transmission; losses, stability and fault analysis; computer modelling; load transfer limits; reactive power control.

Protection and switch gear as factors affecting energy transmission: protection principles; relaying; real-time computer monitoring; survey of power switch gear.

Gas and fuel supply
Gas transmission: adiabatic and isothermal compressible flow of gases and vapours; load storage optimisation, facilities for pipeline operation; solid suspensions; blowing and slurries; gas reutilisation. Fuel transport: rail and road transport of solid and liquid fuel; mechanical conveying; sea transport of oil and liquefied natural gas; terminal installations.

References

EE555 Electrical Design and Project
Five hours per week for one semester
A final-year subject in the electrical power stream of the degree course in electrical 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
McCord, C.D. The Economics of Electricity Supply in Australia. MUP, Carlton, 1976
Beighton, J. Systems Milton, Keynes, The Open University T100 1, 1971

EE557 Electronic Design and Project
Five hours per week for one semester
A final-year subject in the electronics stream of the degree course in electrical 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
McCord, C.D. The Economics of Electricity Supply in Australia. MUP, Carlton, 1976
Beighton, J. Systems Milton, Keynes, The Open University T100 1, 1971

EE571 Operations Research in Electrical Engineering
Four hours per week for one semester
A final-year subject in the electrical power stream of the degree course in electrical 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

EE573 Operations Research in Electronic Engineering
Four hours per week for one semester
A final-year subject in the electronics stream of the degree course in electrical 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 electronic and communications eng.ering.

References

EE580 Computer Systems Engineering
Four hours per week for one semester
A final year elective subject in the electronics stream of the degree course in electrical engineering. This subject is conducted jointly by the Department of Electrical and Electronic Engineering and the Department of Computer Studies.

Computer electronics: LSI technology; microprocessors, memories, peripherals, high density and high speed technologies; computer architecture; computer elements; microprogrammable processors; buses and bus standards, interfacing to peripherals and processors; hardware and software support for developing dedicated systems, allocation of hardware and software functions.

Computer software: storage of data sets, searching and sorting techniques, high level languages and their compilation, introduction to operating systems, memory management, program segmentation and linking, multiprocessing, distributed processing.

EE581 High Voltage Systems
Four hours per week for one semester
A final year elective subject in the electrical power stream of the degree course in electrical engineering. Travelling wave theory and surge phenomena. Insulation coordination for lines and stations. High voltage insulation, Breakdown mechanisms. Characteristics and applications. Selected topics from high voltage DC systems, circuit breakers, transformers and other station equipment. Advanced protection schemes.

References
Alston, L.L. High Voltage Technology. Lond., Oxford University Press 1968
References
Connor, P.R. Antennas. Lond., Edward Arnold, 1972
Green, P.E. and Lucky, R.W. eds. Computer Communications. N.Y.,
IEEE Press, 1974
London, H.M.S.O., 1970
Lin, S. An Introduction to Error Correcting Codes. Englewood Cliffs,
N.J., Prentice-Hall, 1970
Schwartz, M. Computer-Communication Network Design and
Spilker, J.J. Digital Communications by Satellite. Englewood Cliffs,
N.J., Prentice-Hall,1977
Martin, J. Telecommunications and the Computer, 2nd edn,
Martin, J. Systems Analysis for Data Transmission. Englewood Cliffs,
N.J., Prentice-Hall, 1972

EE582 Communication Systems
Four hours per week for one semester
A final year elective subject in the electronics stream of the degree
course in electrical engineering.
Communications: network analysis, one and two part networks, filter
approximations and realisations, active filters; spectral analysis,
aplications of Fourier series, Fourier transforms, principles of PCM
and multiplexing.
Data transmission: modems, channel characteristics, buffering and
concentrations, random access techniques, satellite communications.
Antennas and propagation: Navigational aids, radar.

References
Connor, P.R. Antennas. Lond., Edward Arnold, 1972
Green, P.E. and Lucky, R.W. eds. Computer Communications. N.Y.,
IEEE Press, 1974
London, H.M.S.O., 1970
Lin, S. An Introduction to Error Correcting Codes. Englewood Cliffs,
N.J., Prentice-Hall, 1970
Schwartz, M. Computer-Communication Network Design and
Spilker, J.J. Digital Communications by Satellite. Englewood Cliffs,
N.J., Prentice-Hall, 1977
Martin, J. Telecommunications and the Computer, 2nd edn,
Martin, J. Systems Analysis for Data Transmission. Englewood Cliffs,
N.J., Prentice-Hall, 1972

EE583 Electrical Machine Drives
Four hours per week for one semester
A final year elective subject in the electrical power stream of the
degree course in electrical engineering.
Direct current machines: transfer functions, state models. Control
strategy, torque and speed feedback loops. Transducers. Solid state
control, four quadrant operation, regenerative braking, fully-
controlled converters, choppers. Starting methods.
Induction motor: speed control by variation of terminal voltage, pole
changing, pole amplitude modulation, variation of rotor resistance.
Energy return to supply. The static Inverter. Performance of an
induction motor on a non-sinusoidal supply, high frequency
voltages.
Synchronous machine: motor-starting methods and operation under
variable speed applications.
Common machine topics: windings, analysis and design, insulation and
copper materials, Noise and acoustic measurements.
Standards applicable to machine manufacture and performance.
Linear forms of machines.

References
Kamalvand, M. Power Electronics. Thyristor Controllers for
Electric Machines. Lond., Chapman and Hall, 1973
Murphy, J.D. Thyristor Control of AC Motors. Oxford, Pergamon
Press, 1971
AS1359 General Requirements for Rotating Electrical Machines.
Standards Association of Australia

EE584 Electronics Systems
Four hours per week for one semester
A final year elective subject in the electronics stream of the degree
course in electrical engineering.
System concepts: determination, specification, definition. Digital
methods, algorithmic state machines. Z domain, digital filters. MS/LSI
functions, digital hardware techniques. High speed electronics.
Analogue methods: information processing, PLL techniques, analogue
functions, modulators.

References
Blakelock, T.R. Digital Design with Standard MS and LS, 2nd edn,
N.Y., Wiley, 1979
Clare, C.R. Designing Logic Systems Using State Machine. N.Y.,
McGraw-Hill, 1979
Fletcher, W.I. An Engineering Approach to Digital Design. Prentice
Hall, 1980

EE585 Electrical Power Engineering
Eight hours per week for one semester
A final year subject in the electrical power stream of the degree
course in electrical engineering.
Electrical machines: transients. Transient representation of
synchronous, induction and DC machines. Electrical machine
dynamics.
Power system stability. Stability studies. Simplified and computer
methods.
Overvoltages and transients of electrical supply systems.
Overvoltage protection.
Circuit interruption principles and circuit breakers.
Protection principles. Protection schemes for electrical plant and
systems.
Electrical distribution and reticulation. Principles and equipment.
Earthing. Safety.
Electrical power control. A survey of the dynamics of power systems.
Power system as a state model. Control of real powerfrequency and
reactive power voltage.

References
Bewley, L.V. Travelling Waves on Transmission Systems. 2nd edn,
N.Y., Dover, 1951
London, I.E.E., Peregrines for IEE, 1975
Interscience, 1971
O’Kelly, D. and Simmons, S. Introduction to Generalized Electrical

EE587 Electronic Engineering
Eight hours per week for one semester
A final year subject in the electronics stream of the degree course in
electrical engineering.
Analogue electronics: phase locked loop components and basic
performance parameters, data acquisition components, power
electronics.
Digital electronics: comparison of alternative microprocessors and
interfacing methods, high speed line driving and receiving for digital
data transmission, input output isolation.
Communications: selected topics from broadcasting and television,
telephone, radio communications.

EE588 Electronics
Four hours per week for one semester
A final year elective subject in the electrical power stream of the
degree course in electrical engineering.
A selection of topics from: solid state switching, tuned amplifiers,
positive feedback amplifiers, power amplifiers, analogue
data acquisition, digital signal processing.

EE589 Control Systems
Four hours per week for one semester
A final year elective subject in both streams of the degree course in
electrical engineering.
Advanced treatment of linear systems analysis applied to multiple
input output systems and process control.
Design of systems with non-linearities. Use of intentional non-
linearities in design. Stability of non-linear systems.
Optimal control concepts: optimal and adaptive control strategies.
Computers in control system design, digital and hybrid.
Industrial control: industrial drives, process control systems, the use
digital control techniques.
A set of design-based projects.
References

EE631 Electrical Power and Electronics
Four hours per week for one semester

References
Bell, E.C. and Whitehead, R.W. Basic Electrical Engineering and Instrumentation for Engineers. Lond., Crosby Lockwood Staples, 1977

EE632 Administrative Practice
Four hours per week for one semester

References
Huse, E.F. The Modern Manager. St Paul, West, 1979

EE633 Telecommunication Principles
Six hours per week for one semester

References
Connor, F.R. Modulation. Lond., Edward Arnold, 1973

EE731 Electronics
Four hours per week for one semester

References
Frenzel, L.E. Getting Acquainted with Microcomputers. Indianapolis, Sams, 1978

EE733 System Planning and Control
Six hours per week for one semester

References
Selected Australia, British, DEF (Aust.) and MIL Standards.
EE734 Telecommunication Systems
Six hours per week for one semester

A subject in the graduate diploma course in telecommunication systems management.

Data transmission: computer interfacing. EIA and CCIT standards.
Buffering and concentrators. Routing network algorithms.

Error detection and correction: introduction to coding theory.
Forward error correction. ECC, ARQ systems.


Specialised communication techniques: spread spectrum techniques. Troposcatter systems. Fibre optic communications.

Selective calling systems.


Space segment characteristics: Transponders, satellites, communication networks.

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.

EG501 Statistics and Methodology of Research
A subject which is normally taken by students enrolled for the degree of Master courses in engineering or applied science.

Statistics: study of application of statistics in experimental design and analysis.

Instrumentation: introduction to instrumentation, transducers, amplifiers, recorders, etc. appropriate to the student's research projects.

Literature review: critical review of selected literature in the student's field of research.

This subject may be undertaken over a period of 2 years. Classes in statistics and instrumentation are arranged so that requirements can be met in any two-year period.

EM417 Thermal Technology
Two hours per week for one semester

A subject in the graduate diploma course in energy systems.

The course provides a thermodynamic background for later studies and includes the following topics: working fluids and systems; availability of thermal energy; cycles; heat transfer; combustion.

References
Eastop, T.C. and McCairney, A. Applied Thermodynamics for Engineering Technologists. S.I. Units. 2nd edn. Lond., Longmans, 1979


EM421 Process Heating
Two hours per week for two semesters
Assessment is continuous

A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.


EM424 Energy Resources and Conversion
Four hours per week for one semester

A subject in the graduate diploma course in energy systems.

The course provides fossil fuel resources, solar radiation principles and energy usage patterns. Other topics include: synchronous machines; steam plant; heat exchangers; gas turbines; heat pumps; hydro power; energy storage systems and devices. Practical and demonstration work is integrated with lectures.

References

Howard-Smith, I. and Werner, G.J. 'Coal Conversion Technology', Chemical Technology Review No. 66, N.D.C., 1976


EM425 Environmental Engineering
Two hours per week for one semester

A subject in the graduate diploma course in energy systems.

The subject outline is as follows: human comfort; atmospheric emissions; noise; environmental factors associated with power stations; transportation of liquid fuels.

References


EM441 Air-conditioning 1
Three hours per week for two semesters

Assessment is continuous

A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.

The syllabus outline is as follows: psychometric properties of the air-water mixture. Psychometric chart and processes. Condition criteria. Heat transfer; summary of conduction, convection and radiation. Heat gain and loss from buildings; determination of system parameters. Methods of heating, cooling, humidifying and dehumidifying. Air cleaning. Ventilation and heating. Instrumentation and control of systems.
References
Great Britain, Ministry of Power and Fuel Efficiency Committee. The Efficient Use of Steam. Lond., HMSO, 1947
Tables of Refrigerant Properties. Swinburne College Press

EM442 Air-conditioning 2
Three hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus outline is as follows: vibration and noise. Fluid flow, duct design, air distribution. Heat transfer; non-steady state and complex shapes. Systems; survey of general forms of air-conditioning systems; selection of systems. Refrigeration applied to air-conditioning. Applications ... industrial, commercial, planning and organisation.

References
Examinations. Lond., Longmans, 1968
Tables of Refrigerant Properties. Swinburne College Press

EM443 Refrigeration 1
Three hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus outline is as follows: properties of refrigerants. Analysis of vapour compression cycle and descriptive work on the principal components; descriptive work on absorption and steam jet systems; analysis of air cycles; food preservation; refrigeration load computations.

References

EM444 Refrigeration 2
Three hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The syllabus comprises topics selected from: complex vapour compression cycles; absorption system analysis; heat; mass, and momentum transfer; cryogenic systems; thermo-electric systems; evaporative condenser and cooling tower analysis; operation of vapour compression systems including detection of common faults.

References
Tables of Refrigerant Properties. Swinburne College Press

EM451 Project Work
Two hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in air-conditioning which consists of lectures, tutorials, seminars, visits and practical work.
The work involves design, construction, evaluation and for testing, in varying proportions, of either equipment or plant relating to the field of heating, ventilation, air-conditioning and refrigeration.

EM505 Materials and Processes
Three hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in maintenance engineering.
Processes for maintenance and repair associated with equipment restoration; rebuilding and repair of components and structures. Outcomes of the use of incorrect materials from the point of view of strength, fatigue, rigidity, vibration, wear and resistance to hostile environments. Studies are based on actual cases occurring in industries in which students are employed. Use is made of visits to industry with associated seminars.

EM506 Maintenance Planning and Control
Three hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in maintenance engineering.
Requirements of a department for determining optimal strategies. Development of planning, programming, controlling and evaluating quantitatively determined maintenance schedules.

EM507 Maintenance Engineering 1
Four hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in maintenance engineering.
Mechanical phenomena of vibration, fatigue, wear, corrosion and lubrication related to maintenance technology. Breakdown caused by mechanical failure. Prediction methods, reliability techniques and standardisation methods. Human factors in maintenance engineering, safety, first aid, codes and regulations related to maintenance. Illustrations are drawn from industrial areas. Design for maintenance and feed-back of in-service experiences is emphasised.

EM508 Maintenance Engineering 2
Four hours per week for two semesters. Assessment is continuous
A subject in the graduate diploma course in maintenance engineering.
Application of maintenance technology to principal types of industrial and commercial classes of plant and equipment. Emergency maintenance specifically related to faults, repairs and contingency measures. Installation, commissioning and verification of new plant and equipment. Environmental and pollution problems and solutions.
EM524 Energy Resources and Conversion
Four hours per week for one semester
A subject in the graduate diploma course in energy systems.

References

EP421 Applied Research and Operational Research
Sixty hours
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
Moroney, M.J. Fact, from Figures. 3rd edn, Harmondsworth, Penguin, 1956

EP422 Engineering Administration
Sixty hours
A 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

EP423 Financial Aspects of Industrial Management
Sixty hours
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
Sixty hours
Assessment by examination and class assignments
A subject in the graduate diploma 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
Sixty hours
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 English law, powers and organisation of 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 Coniliation and arbitration law. Restrictive trade practice.

References
Keating, D. Law and Practice of Building Contracts, including the Law Relating to Architects and Surveyors. 3rd edn, Lond., Sweet and Maxwell, 1969
Sykes, E.J. The Employer, the Employer and the Law. 3rd edn, Syd., Law Book Co., 1973
EP246 Management Practice
Ninety hours
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, lectures, management games, etc. Present management practices and some likely future trends are discussed. This is taken in the final year of the course. Emphasis is on marketing and personnel aspects not covered in the course.
Recommended text
Drucker, P.F. Management Lond., Pan, 1979

References
Drucker, P.F. Management: Tasks, Responsibilities, Practices. Lond., Heinemann, 1974
Humble, J.W. Management by Objectives Lond., Cower Foundation, 1972
Yuill, B. Developing Managers in Organisations. Syd., Wesley, 1975

EP435 Physical Distribution Management
Sixty hours
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., Cower Press, 1971
Smykay, E.W. Physical Distribution Management. 3rd edn, Lond. and N.Y., Macmillan, 1971

EP436 Environmental Studies
Sixty hours
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

EP515 Production Technology
Sixty-three hours including laboratory
Assessment by test and assignments
A final-year subject in the degree course in manufacturing engineering (production technology stream).
Recent processes in production technology, e.g. numerical control, CAM, EDM, ECM, lasers etc. (reflecting current departmental interest). Machine tools; analytical models for vibration of machine tools, vibration isolation and damping, self-induced and forced vibration, chatter, instability. Deformation mechanics: oblique forming, multi-point tools, analysis of deformation, Load bounding solutions to metal forming and cutting including axisymmetric problems, extension of mathematical models to inhomogeneous deformation.

Textbook
Rowe, G.W. Elements of Metalworking Theory. Lond., Arnold, 1979

The use of work study as a means to the effective utilisation of resources generally and particularly materials, is further defined
**EP525 Industrial Management**
Fifty-four hours
Assessment by test and assignments
A final-year subject in the degree course in manufacturing engineering.
Legal aspects: contract law, employer-employee relations, buyer-seller relations, industrial legislation.
Industrial relations: arbitration and collective bargaining, trade unions, wage administration, job enrichment.
Industrial psychology, personnel assessment and evaluation, working conditions, modern theories, ethics.

**References**
Andreatta, H. and Dufty, N.F. Penguin, 1954
Sykes, E.I. The Employer, the Employee and the Law. Syd., Law Book Co., 1973

**EP526 Elective**
Forty-five hours
Assessment by tests and class assignments
A final-year subject in the degree course in manufacturing engineering which is chosen by the student group from subjects offered by other departments, including Arts, Business and Arts.
This subject is offered by the Liberal Studies Department of the Faculty of Arts. It includes the following topics: our culture in an anthropological perspective: the place of interpersonal skills and conceptualising in management; the use of conceptual models and the constructive uses of technological and social change.

**References**
A list of suitable references will be provided at the commencement of the course.

**EP535 Industrial Engineering**
Fifty-four hours
Assessment by tests and assignments
A final-year subject in the degree course in manufacturing engineering which involves a study of principles and practices of the planning and control function in production organisations with particular emphasis on the use of quantitative and analytical procedures for the solution of problems. The range of problem areas will include plant location, plant and factory layout, transportation, maintenance, equipment replacement, economic batch sizes, network planning, resource allocation, stock control, line balancing and machine interference. Theoretical lecture work will be complemented by selected films, discussions and suitable practical work.

**Recommended text**

**References**
Buffa, E.S. Modern Production Management 4th edn, N.Y., Wiley, 1973

**EP555 Design for Manufacture**
Ninety hours (includes a thirty-six hour project in industry)
Assessment, tests, assignments and project
A final-year subject in the degree course in manufacturing engineering.

**EP556 Manufacturing Systems**
One hundred and forty hours
Assessment, project report
A final-year subject in the degree course in manufacturing engineering. Production technology stream which is designed to give an inter-disciplinary approach towards the application of relevant knowledge from the whole field of production engineering to the establishment of a manufacturing system. It is intended that students prepare for this subject during their last period in industry. Wherever possible, students are expected to apply their knowledge to the study of a genuine industrial case. This work, which will be assessed, may also include an applicable experimental project.

**EP611 Metal Working Technology**
Ninety hours
Assessment, tests, assignments and laboratory work
A subject in the graduate diploma course in manufacturing technology.
Background metallurgy: necessary atomic structure, dislocation theory and slip, effects of hot and cold working, strain and strain rate effects. Stressstrain and basic introduction — basic laws, curves, obtaining stressstrain data, yield criteria, empirical data approach, flow rules. Friction and lubrication: mechanism, friction tests. Mathematical modelling: selection of metalworking processes to demonstrate the use of flow rules, yield criteria, friction models, stress state and practical applications of theories. Empirical methods. Analysis of metal deformation processes, and the influence of temperature and pressure on deformation. The design of metal parts, use of empirical data (application to processes as mathematical models). Slip-line field, slip-line field theory, applications to plane strain problems, comparison of techniques, use of metal cutting, redundant work, friction, Load bounding: upper bound approach (shear, friction and deformation power), redundant work, application to processes, extension to approximations, axial symmetry.

**References**
Rowe, G.W. Principles of Industrial Metal Working Processes. Lond, Arnold, 1977

**EP612 Polymers Processing Technology**
Ninety hours
Assessment, tests, assignments and laboratory work
A subject in the graduate diploma course in manufacturing technology.
This subject will give some insight into plastics and rubber materials and their processing. Particular emphasis will be placed on compounding, fabrication into finished products, and the influence of the polymer composition on quality of the plastic. The subject will also include the handling and processing of rubber and plastics in the manufacturing processes. The subject will also include the handling and processing of rubber and plastics in the manufacturing processes.

**References**
Lockyer, K.G. Production Control in Practice. 2nd edn, Lond., Pitman, 1975
evaluation, material range and cost. Additives, compounding and composites: additives for crosslinking, plasticisation, reinforcement, stabilisation and pigmentation, compounding methods, composites, cellular materials.

Processing, fabrication and conversion: details of all important processes, with emphasis on extrusion and injection moulding, effects of processing on plastic and rubber properties, common problems and products defects, finishing, assembly and decoration, re-processing and waste handling, quality control. Product design and choice of material and manufacturing route: comparative polymer (and non-polymer) property and costing data, product requirements, design and best manufacturing route, assignment to design a complete manufacturing system for a particular component.

References
Blow, C.M. Rubber Technology and Manufacture. Lond., Newnes-Butterworths, 1971

EP613 Manufacturing Systems
Ninety hours
Assessment, tests, assignment and laboratory work
A subject in the graduate diploma course in manufacturing technology.

Systems engineering: batch and mass production, automated assembly, transfer machines, machining centres, group technology systems. Numerical engineering: numerical control, direct and computer numerical control, adaptive control, computer languages, economic and organisational aspects of numerical control, computer-aided manufacture. Modelling techniques: system identification, control and optimisation. Industrial dynamics: forecasting, operations planning, inventory and planning control, operations scheduling, dispatching and progress control.

Textbooks

References
Burbridge, J.L. The Introduction of Group Technology. Lond., Heinemann, 1975
Sawas, E.S. Computer Control of Industrial Processes N Y., McGraw Hill, 1965

EP621 Experimental Design and Instrumentation
Sixty hours
Assessment, tests, assignments and laboratory work
An optional subject in the graduate diploma course in manufacturing technology.


Reference

Reference

**ME119** Engineering Principles: Mechanics
Two hours per week for two semesters
A first-year subject in the associate diploma course in production engineering.
Topics include kinematics, forces, couples and moments, friction, Newton's laws.

**ME125** Thermodynamics and Heat Transfer
Two hours per week for two semesters including lectures, demonstrations, tutorials and laboratory work.
A first-year subject in all degree courses in engineering

The syllabus deals with: the working substance, factors of state and properties, PVT relations for the solid, liquid and vapour phases; perfect gases; energy systems, closed and open; first law, energy equations, internal energy, enthalpy; reversibility; heat transfer; one-dimensional conduction including heat generation, conductivity, Fourier equation; convection, natural and forced; Newton's law of cooling, overall coefficients; radiation — small body in large enclosure.

Applications to plant and equipment common to a wide spectrum of engineering endeavour. Selected topics of interest and importance to all engineers: solar energy, motor vehicle emissions, power plant, engine modification and tuning, thermoelectricity, heat sinks, heat pumps, refrigeration and air-conditioning, heat exchangers.

Reference

**ME129** Engineering Principles: Heat
Thirty hours
Assessment, tests, assignments and laboratory work
An elective subject in the first year of all engineering degree courses

The syllabus deals with: interaction and matching of component characteristics, system specification, planning, time and cost constraints, applied research, installation, assessment, experimental organisation, instrumentation, commissioning, documentation, debugging, modification and development; applications to functional design, mechanisms, human engineering, energy, information flows, control, power transmission and other areas.

Reference
Students are given the opportunity to be involved in realistic engineering concepts, techniques and procedures through a selection of small projects. Typical examples involve work in solar energy, aeronautical, energy, motor vehicles, engines, environmental problems, compressed air, power plant, pumps, fans, turbines, hovercraft, aircraft, marine engineering, hydraulic plant, environmental heating, ventilation, air-conditioning and refrigeration.

**ME 169 Building Services I**

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: general principles, equipment, inspection and maintenance, regulations and standards.

Hot water services: distribution systems, heaters and boilers, steam lines. Solar heating. Inspection and maintenance regulations.

Ergonomics: effects of features of building services on human performance and comfort, special arrangements for the physically handicapped, system effects of various services.

Fire protection: human behaviour in fires, cause of fires and the way fires develop. Design for fire protection. The roles of building surveyor, engineer, architect, builder and legislative authority.

Fire services: detectors, monitors, controls, alarms, sprinkler systems, smoke control.

Electrical services: basic principles, motors, generators, cables, ducts, wiring, electrical safety, illumination, emergency supplies.

**ME 221 Energy Systems**

Three hours per week for two semesters including lectures and laboratory/tutorial work

A second-year subject in the degree course in mechanical engineering.

The syllabus is divided into two parts.

**Thermodynamics**

This course involves treatment of thermodynamic systems and working fluid properties, unsteady flow, the second law of thermodynamics and corollaries, entropy and reversibility, availability of low grade energy, gas power cycles and internal combustion engine plant, vapour power cycles and steam plant, heat transfer: unsteady state conduction, radiation.

**Electronics**

This course involves basic circuit theory, transfer functions, Bode diagrams, modern electrical devices such as operational amplifiers, analogue and digital devices and converters, binary arithmetic and sequential logic, integrated circuits, counters. shift registers, clocks and arithmetic units.

**References**

Eastop, T.C. and McConkey, A. Applied Thermo-dynamics for Engineering Technologists — S.I. Units. 2nd edn, Lond., Longmans, 1970


Hughes, E. Electrical Technology — S.I. Units. 4th edn. Lond., Longmans, 1972

Joel, R. Baltic Engineering Thermodynamics in S.I. Units. 3rd edn. Lond., Longmans, 1971


Smith, R.J. Circuits, Devices and Systems. 2nd edn. N.Y., Wiley, 1971


**ME 219 Applied Mechanics**

Five hours per week for two semesters, including lectures and laboratory/tutorial work.

A second-year subject in the degree course in manufacturing engineering.

The syllabus is divided into three parts:

A course of sixty hours involving treatment of rigid body dynamics, circular motion, combined linear and angular systems, impulse and momentum, work and energy.

**Solid Mechanics**

A course of sixty hours involving treatment of strain and stress, strain measurement, deflection due to bending, shear flow, torsion and shear centre, introduction to statically indeterminate systems.

**Fluid Mechanics**

A course of thirty hours involving treatment of fundamental fluid concepts, fluid statics, fluid dynamics, steady incompressible flow.

**References**


**ME 231 Instrumentation and Control Systems**

Two hours per week for one semester including lectures and laboratory/tutorial work.

A second-year subject in the degree course in mechanical engineering.

This course involves treatment of general requirements of measurement and instrumentation in mechanical engineering plant, selection and use of appropriate instruments, matching of component characteristics within a system including those of simple control devices.

**References**


ME241  People-environment Systems
Two hours per week for two semesters including lectures, laboratory and tutorial work
A second-year subject in the mechanical engineering degree course which is the first of a compulsory four-subject series. 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: workspace design and evaluation, particularly acceleration, vibration, and space.

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 involves 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. Specialties services: reticulated compressed air, vacuum lines, stand-by generating sets. Provisions for controls, adjustments, inspections and maintenance. Electrical services: electrical circuits, electrical equipment, building supplies, electrical safety, illumination and emergency supplies.

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.

ME318  Applied Mechanics
Three hours per week for two semesters
A subject in the third year of the associate diploma course in production engineering. The course content is an extension of the first year subject ME119. Topics include:
(a) structural mechanics: beams and frames, simple and combined stresses and strains, columns.
(b) mechanics of machines: Newton’s laws, linear, rotational and combined systems, vibrations.
(c) fluid mechanics: properties, hydrostatics, kinematics, flow measurement, fluid machinery.

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.

ME321  Energy Systems
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 fosters a student’s ability to apply the basic principles of mechanics to the analysis of engineering systems. The course is in three equal parts:

Machines
Constrained relative motion and kinematics of machines, kinetic analysis, rotating and reciprocating balance, gyroscopic action.

Solid Mechanics
Elastic instability, columns, local buckling, torsional instability in bending, membrane stresses in thin shells, short beams, thick curved beams.

Fluid Mechanics
Review of fluid motion, introduction to real fluids, dimensional analysis and similarity, viscous fluid flow in pipes.

References

References

References
ME331 Instrumentation and Control Systems
Two hours per week for one semester including lectures, laboratory and tutorial work.
A third-year subject in the degree course in mechanical engineering designed to provide competence in classical automatic control system analysis and in the understanding necessary to interface instruments, transducers, and microprocessor-based controls to mechanical engineering systems.

Classical control theory, block diagram, Laplace transforms, Bode diagrams.

References

ME341 People-environment Systems
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 is the second of a compulsory four-subject series. This subject involves investigation of parameters influencing vigilance and alertness, the effects of heat stress, noise and light on human performance: strategies of human decision-making, performance characteristics.

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.

ME411 Applied Mechanics
Five hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering.
The course is in three equal parts:
Machines
Response of machine elements to dynamic disturbance, free, viscous damped, and forced mechanical vibrations, single degree of freedom systems, torsional vibration.

Solid Mechanics
Theory of elasticity and plasticity, theory and application of experimental stress analysis, numerical methods and approximate solutions.

Fluid mechanics
Review of fluid momentum, principles of fluid machines, applications of moment equation, energy losses and efficiency, characteristics of rotor dynamic machines, system-matching, fluid drag, boundary layers and waves.

ME421 Energy Systems
Two hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering designed to provide a foundation in the physical laws governing thermal energy transfer and conversion and to provide students with a logical explanation of features and characteristics of established and developing thermal plant and equipment.

Gas and vapour flow-through nozzles and diffusers, turbo expanders and compressors, thermocouple plant.

ME431 Instrumentation and Control Systems
Two hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering designed to provide competence in control system analysis and the interfacing of linear and non-linear mechanical systems with instrumentation transducers and microprocessor-based controls.

ME441 People-environment Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering, the third of a four-subject series.

Course work in this subject covers information theory, the analysis of motor skills, analysis, psychophysics, signal detection theory, job analysis and specification, personnel selection, training and industrial motivation.

Students are expected to undertake a study in depth and to present an oral report to the class.

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 fundamentals of marketing and consumer behaviour, buying processes, technical planning associated with sales, deterministic and stochastic factors in predictions associated with planning.

ME471 Design for Industry
Three hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering designed to improve the students' ability to specify engineering objectives, design original equipment and select commercial equipment to form complex engineering systems, and develop the necessary skills to perform the project design function to industry.

Safety and maintenance of advanced mechanical systems, project management, modern design techniques, future trends, materials and systems. Project design of substantial advanced mechanical systems.

ME481 Engineering Investigation
Three hours per week for one semester including lectures, laboratory and tutorial work.
A fourth-year subject in the degree course in mechanical engineering which familiarises students with the correct procedures to be followed when undertaking an engineering project or investigation.

Students work in small groups under staff supervision on appropriate laboratory projects and investigations.

A literature search, feasibility study and preliminary technical report indicating technical feasibility, costing and time constraints, is required. Recommendations must be submitted in a technical report. Where appropriate, the work may be continued under the fifth-year subject - Cooperative Project.
ME511 Applied Mechanics
Five hours per week for one semester including lectures, laboratory and tutorial work.
A fifth-year subject in the degree course in mechanical engineering designed to enable students to analyse and synthesise solutions to more advanced problems in engineering mechanics.
The syllabus for applied mechanics is in three parts:
Machines
The response of machines to dynamic disturbance, vibrations, multi degree of freedom systems, linear and non-linear, continuous and discrete, spectral analysis.
Solid mechanics
Beams with combined axial and lateral loads, deformations about an axis of symmetry, and at least two topics from: elastic foundations, local bending of thin shells, finite element analysis, plates and shells, deformation beyond the elastic limit.
Fluid mechanics
Selections of at least three topics may be made from: flow of ideal fluids, unsteady flow, flow with appreciable density changes, low Reynolds number flow, free surface flow.

ME521 Energy Systems
Three hours per week for one semester including lectures, laboratory and tutorial work
An elective subject in the fifth year of the degree course in mechanical engineering designed to provide students with a logical development of thermal plant and equipment.
Gas turbines, jet engines, mixtures and psychometry, solar radiation and applications. Selected topics from: direct energy conversion, advanced heat and mass transfer, internal combustion engines, alternative automotive power units.

ME531 Instrumentation and Controls Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering designed to develop competence in the interfacing of instruments, transducers and microprocessor-based systems to mechanical plant and in selected topics from modern control theory.
Modern control theory, state space, application to industrial multi variable controls, discrete state space, microprocessor-based controllers.

ME541 People-environment Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
A fifth-year subject in the degree course in mechanical engineering which is the final subject in a series of four.
The syllabus covers measurement techniques including physiological measures, scaling and data analysis, questionnaires and interviews: variables influencing speech communication, organisational structure and its influence on group leadership, job design, aspects of the socio-technical system: application of ergonomics principles to transport, buildings, computer systems, and control systems.

ME551 Decision Analysis and Financial Management
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering which further develops 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.

ME552 Plant Information Systems
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering designed to develop expertise in modern methods of handling information to do with engineering plant and equipment.
Acquisition, documentation, filing, processing, analysis, prediction and decision-making techniques associated with information concerning engineering plant and equipment with applications to procurement, operation, reliability maintenance, updating and disposal.

ME561 Engineering Plant and Equipment
Three hours per week for one semester including lectures, laboratory and tutorial work.
An elective subject in the fifth year of the degree course in mechanical engineering which develops in the student a wide-ranging familiarity of modern engineering plant and its proper use.
Plant basic items and characteristics, matching of component characteristics to produce complete operating systems, plant performance and reliability, plant maintenance and trouble-shooting, investigations and reports.

ME581 Cooperative Project
Five hours per week for one semester including lectures, laboratory and tutorial work.
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 completion.
The project is cooperative in that it requires close coordination between Swinburne and industry facilities and may take various forms in which technology, research and development, design, experimental work and business acumen vary in their relative significance thus permitting further appropriate variations in emphases to suit the needs of individual students.

MP101 Engineering Drawing
Three hours per week for two semesters
Assessment by assignments, test and examination.
A first-year subject in all engineering degree courses.
The course is designed to provide basic knowledge of the fundamental principles of engineering drawing — standards, conventions, practices and procedures — applicable to the general field of engineering.
Studies and exercises cover principles, various types of engineering drawings, conventional representation and specification in engineering, techniques in simple design and drawing office systems. Through a series of elective topics the general principles are extended to cover the specialised methods and drawing requirements in particular fields of engineering.

Textbook

References
A list of references, standards and texts together with printed notes is provided by lecturers.

MP102 Engineering Practices and Processes
Two hours per week for two semesters
Assessment, examination and projects.
A first-year subject in all engineering degree courses which provides an introduction to as wide a range of fabrication processes as possible and the engineering language associated with these processes.
The subject provides practical experience of skills associated with some of these processes, within the resources available. Students are introduced to the engineering profession generally.

Textbook
MP103  Engineering Drawing and Graphics
Four hours per week for two semesters
A first-year subject in the associate diploma course in engineering which is designed to equip students with the basic skills in technical drawing, engineering drawing, descriptive geometry, graphical problem-solving, and data presentation.

Textbook

MP104  Engineering Processes
Four hours per week for two semesters
A first-year subject in the associate diploma course in production engineering which provides an introduction to a wide range of engineering industries, and the remaining time is used in explanation of the processes.

Textbook
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP105  Engineering Tutorial
Three hours per week for two semesters
A first-year subject in the associate diploma course in production engineering which includes tutorial exercises, data processing, and formal communication studies.

MP181  Engineering Science: Materials
Two hours per week for two semesters
A first-year subject in the associate diploma course in production engineering aimed at providing a qualitative appreciation of the properties of materials and in particular the way in which these properties influence the selection and use of materials. Topics include metals, ceramics, polymers, mechanical properties, selection and shaping.

MP182  Building Materials
Two hours per week for first semester and three hours per week for second semester
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.

Textbook
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP191  Manufacturing Engineering Elective
Two hours per week for one semester
An elective subject in the first year of all engineering degree courses. Through a series of lectures and plant visits students develop an understanding of the scope and nature of Australian manufacturing industry, its place in the national economy, and the role of engineers in various aspects of manufacturing.

MP211  Manufacturing Technology
Three hours per week for two semesters
A second-year subject in the degree course in manufacturing engineering.


Textbooks
De Carmano, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979
Galyer, J.F.W. and Shilforth, C.R. Metrology for Engineers — S.I. Units. 3rd edn, Lond., Cassell, 1969

MP222  Building Materials 2
Two hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to extend students' knowledge of material behaviour relevant to building construction.

Detailed treatment of behaviour of selected materials used in building: steels, high strength weldable steels, aluminium alloys, 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 joining 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
International Labour Office (ILO), Introduction to Work Study. 3rd edn, Geneva, ILO, 1979

MP251  Design for Manufacture
Three hours per week for two semesters
Assessment by assignments and project work
A second-year subject in the degree course in manufacturing engineering which introduces designing for manufacturing and design to suit manufacturing techniques. Basic machine design.


Textbook

References
Selected standards
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, ironous and non ironous; 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
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

MP283 Engineering Materials
Three hours per week for one semester
Assessment by assignments and examination
A second-year subject in the degree course in electrical engineering. Extends the work covered in first year Chemistry to consider the characteristics of materials of particular importance in electrical 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.
Structures, properties, and treatment of ferrous and non-ferrous metals, polymers, compounding and shaping, corrosion, thermodynamics and kinetics, tribology.
Textbook

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: signaling, amplification, recording and readout
Textbook

MP311 Manufacturing Technology (P)
Five hours per week for one semester
Assessment by assignments and test
A third-year subject in the degree course in manufacturing engineering.
Introduction to non-Newtonian fluid flow: classification, theory, application to flow of metals, polymers and slurries.
Textbooks
Rowe, C.W., Elements of Metalworking Theory, London, Arnold, 1979

MP312 Manufacturing Technology (M)
As for MP311

MP313 Manufacturing Technology (C)
Five hour per week for one semester
Assessment by assignments and tests
A third-year subject in the degree course in manufacturing engineering.
Advanced dimensional metrology: as in MP311. Introduction to non-Newtonian flow: as in MP311. Chemical manufacturing technology: material and energy balances, prediction of physical properties of materials, dimensional analysis, phase diagrams and physical equilibria.

MP314 Manufacturing Technology
Three hours per week for one semester
Assessment by tests, assignments and laboratory work
A third-year subject in the degree course in mechanical engineering which familiarizes 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.

MP315 Production Machine Design
Two hours per week for two semesters
Assessment by projects and assignments
A third-year subject in the associate diploma course in production engineering.
This subject provides an understanding of the design of simple machine elements and their application. Design of machine components: joints, shafts, bearing and lubrication systems. Kinetics of machine tools: drives transmission, gearboxes. Tolerancing, jig and fixture design, degrees of freedom, principles of clamping and location, supports, tool-setting, loading and unloading, spindle clearance, gauge design, economics. Design of cutting tools: design and selection of turning tools, form tools, milling, drilling and broach tools.
Reference
Hazelhurst, M. Manufacturing Technology. 2nd edn, Lond., English Universities Press, 1972
Thomas, C.G. Production Technology. Lond., Oxford Univ. Press, 1970

MP316 Manufacturing Technology
Two hours per week for two semesters
Assessment by test, assignments and laboratory work
A third-year subject in the associate diploma course in production engineering.
This subject provides an introduction to the basics of metal-cutting technology, sheet and bulk forming, and automatic cutting machines.
Principles of cutting: simple wedge tool, tool nomenclature, Stabler's Law, effects of major parameters on cutting motion, data sources, cutting fluids, tool materials and heat treatments.
Principles of operation of classes of automatic machine tools: single and multi-spindle autos, semi-autos, plug and pegboard, copying machines, numerical control, transfer lines, low-cost automation in cutting.
Process descriptions and typical applications in bending, extrusion, wire-drawing, rolling, forging, shearing, hot and cold working.

Textbook
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP317 Measurement and Finishing
Two hours per week for two semesters
Assessment by test, assignments and laboratory work
A third-year subject in the associate diploma course in production engineering.
This subject develops an understanding of surface treatments and metrology: plating, anodising, peening, burnishing, chemical baths, coating and painting, nitriding.
Flatness, straightness, length, measurement principles, instruments, standards, surface finish and form, thread measurement.

Textbook
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP318 Introduction to Machines, Materials and Processes
Two hours per week for two semesters
Assessment by test, assignments and laboratory work
A third-year subject in the associate diploma course in production engineering.
This subject develops an interest in, and appreciation of, production processes and engineering materials.
Machine configurations, operating characteristics and applications of broacher, boreer, right, mill, drill, shaper, die-casting, plastics processing plant, presses, grinders, casting plant, powder metallurgy, joining processes.
Relevant heat treatments, equilibrium diagrams, composition and effects of alloying associated with cast iron, carbon steel, brasses and bronzes, aluminium alloys, low alloy steels, zinc, solder and white metals.

Textbook
De Garmo, E.P. Materials and Processes in Manufacturing. 5th edn, Lond., Collier MacMillan, 1979

MP321 Engineering Administration
Four hours per week for one semester
Assessment by satisfactory completion of 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
Byrt, W. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974

MP322 Engineering Organisation and Work Design
Two hours per week for two semesters
Assessment by assignments and tests
A third-year subject in the associate diploma course in production engineering.
The subject gives an appreciation of work systems, work environment and the day to day working of an industrial organisation.
Engineering organisation and procedures; administration, standards codes and regulations, administrative procedures, scheduling.
Work design; engineering systems, system interfaces, man-man interfaces, work space environment.

MP323 Plant Administration
Two hours per week for two semesters
Assessment by assignments and test
A third-year subject in the associate diploma course in production engineering.
This subject develops an understanding of management and an appreciation of its functions and problems.
The syllabus covers such topics as, historical survey, management, financial aspects, functions in industry, industrial legislation, legal aspects.

MP324 Human Aspects
One hour per week for two semesters
Assessment by assignments and participation in group activity
A third-year subject in the associate diploma course in production engineering.
The subject provides an appreciation of the fundamentals of human performance, supervision, group dynamics and industrial relations.
The syllabus covers such areas as psychology of the individual, psychology of social groups, group leadership, industrial relations, wage administration and human engineering.

MP331 Work Engineering
Two hours per week for two semesters
Assessment by assignments and participation in group activity
A third-year subject in the associate diploma course in production engineering.
The subject provides an appreciation of work study and its industrial significance.
Work study: application, choice of work, design of product, technology. Method study: scope and objectives, formal techniques, analytical objective and critical examination, development of best method, principles of motion economy, activity sampling. Work measurement: scope and objectives, standard performance, measurement of work, time study procedures, pre-determined time techniques.
**MP332  Industrial Engineering**  
Two hours per week for two semesters  
Assessment by assignments and test  
A third-year subject in the associate diploma course in production engineering.  
The subject develops an understanding of industrial engineering techniques as applied to production planning and control. The syllabus covers these topics: production, process planning and estimating, progress control, quality control, budgets, systems analysis and design, plant economy and modern techniques.

**Textbooks**  
As for MP311

**MP351  Design for Manufacture**  
Five hours per week for one semester  
Assessment by assignments, project work and tests  
A third-year subject in the degree course in manufacturing engineering.  
Basis for engineering design: kinematics of non-uniform motion, advanced machine elements, pumps, pressure vessels, plant and systems design, quality and reliability, fundamentals of automation.

**Textbooks**  
Rohner, P. Fluid Power Logic Circuit Design. Macmillan 1979

**References**  


Shigley, J.E. Mechanical Engineering Design. N.Y., McGraw-Hill, 1956

Selected Australian and British Standards.

**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.  
Basic control theory, definitions, open and closed loop systems.  
Simplification of systems using classical s-plane and frequency response methods.  
Analysis of linear systems using Laplace transform techniques, block diagrams and transfer functions, system stability and performance criteria, Nyquist, Bode, and Nichols plots.  
Compensation techniques and applications to engineering problems.

**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.  
Alloy steels, Polymer technology, Powder forming, Glass composite systems, Alloy cast irons.

**MP411  Manufacturing Technology (P)**  
Five hours per week for one semester  
Assessment by tests, assignments and laboratory work  
A fourth-year subject in the degree course in manufacturing engineering (production technology stream). The subject extends the work of third-year into more depth and introduces new areas of production technology.  
Noise: transmission, intensity, absorption, insulation, rating, control and measurement.  
Analysis of forming: — analytical methods applied to common working processes, redundant work, friction and lubrication, nomograms.  
Deformation mechanics: slip-line field applied to cutting and forming.  
Vibration: theory, stability charts, damping, vibration of machines and machine elements, measurement.

**Textbooks**  
As for MP311

**MP412  Manufacturing Technology (M)**  
Five hours per week for one semester  
Assessment by tests, assignments and laboratory work  
A fourth-year subject in the degree course in manufacturing engineering (materials technology stream).  
Chemical manufacturing techniques: basic fluid particle systems, hydraulic classification, hindered settling, thickening, Flow through packed beds, sand filters, fluidisation, pneumatic and hydraulic conveying, filtration and centrifuging.

**Textbooks**  

**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  

**Psychology**  
The personnel management function, problems and practices, personality studies — conditioning (classical and operant), assertiveness training and self-esteem, values, defence mechanisms.  
Sexuality and sex roles, the use of conceptual models; listening, relaxation, Change and conflict — their constructive uses.
Managerial economics: Supply and demand, elasticity, pure competition, monopoly and oligopoly; microeconomics of cost, profit, marginal concepts; profit maximisation, pricing, cost of capital; macroeconomic fundamentals: banking system and credit; government controls; inflation; national accounts; GDP; international competition; application of DCF to leasing.

Textbook

MP422 Engineering Administration
Two hours per week for one semester
Assessment by test and assignments
A four-year subject in both streams of the degree course in electrical engineering.
Development of modern management theory and practices. Organisation of enterprises, their needs and structures. Elements of human behaviour and the fundamentals of leadership and supervision.

Textbook

MP431 Industrial Engineering
Three hours per week for one semester
Assessment by test and assignments
A four-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, MD, Mopad; 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 four-year subject in the degree course in manufacturing engineering.
Introduction to modern manufacturing systems and techniques: forecasting; operations planning; inventory and planning control; operations scheduling; dispatching and progress control. Simulation and modelling techniques for testing production management policy decisions: computer simulation languages — concepts and techniques; systems dynamics applied to industrial problems.

Textbooks

MP451 Design for Manufacture (P)
Five hours per week for one semester
Assessment by tests, assignments and projects
A four-year subject in the degree course in manufacturing engineering (production technology stream).

Materials handling equipment: typical systems equipment; bulk handling, lifting, conveying, feeding.
Low cost automation: small variable production automation of existing equipment and plant; handling, machine tools, presses, feeding, loading, unloading, packaging.
Value analysis: quality, functionality and cost, optimum process selection, methods of applications.
Tooling design: economy and batch quantity relationship, jigs and fixture design. Forming tools: diecasting and plastic moulding dies.

Textbooks

References
As for MP251 and MP351 plus
American Society of Tool and Manufacturing Engineers (ASTME). Tool Engineers Handbook. 2nd edn, N.Y., McGraw-Hill, 1959
American Society of Tool and Manufacturing Engineers (ASTME). Handbook of Fixtures Design. N.Y., 1962

MP452 Design for Manufacture (M)
Five hours per week for one semester
Assessment by tests, assignments and projects
A four-year subject in the degree course in manufacturing engineering (materials technology stream).
Materials handling equipment: typical systems equipment; bulk handling, lifting, conveying, feeding.
Low cost automation: small variable production automation of existing equipment and plant; handling, machine tools, presses, feeding, loading, unloading, packaging.
Value analysis: quality, functionality and cost, optimum process selection, methods of applications.
Tooling design: economy and batch relationship. Plastic processing and moulding, glass, ceramics, casting processes.
Plant design and economic evaluation: uses of heat and material balances, modelling and layout.

MP453 Design for Manufacture (C)
Five hours per week for one semester
Assessment by tests, assignments and projects
A four-year subject in the degree course in manufacturing engineering (chemical technology stream).
Materials handling equipment: typical systems equipment; bulk handling, lifting, conveying, feeding.
Low cost automation: small variable production automation of existing equipment and plant; handling, machine tools, presses, feeding, loading, unloading, packaging.
Chemical plant design theory: diffusional processes, mass transfer Advanced thermodynamics.
Plant design and economic evaluation: uses of heat and material balances, modelling and layout.

Textbook
MP484 Engineering Materials

Two hours per week for one semester
Assessment by tests and assignments

An elective subject in the fourth year of the degree course in mechanical engineering.
Welding and joining of ferrous and non-ferrous materials, treatment of structures of welds, welding processes, non-destructive testing, fracture mechanics.

MT515 Materials Technology

A fifth-year subject in the degree course in manufacturing engineering (materials technology stream).
Plastics: thermofoming; calendering, coating techniques, fiberglass reinforced plastic, rubber product manufacturing, cellular plastics, joining methods, decoration, waste handling, testing and quality control; design, and choice of material and manufacturing route.
Metals: deformation mechanics, vibrations and vibration isolation; sheet metal forming; production welding.
Ceramics: consideration of clay product production line and equipment, furnace types and economics of various arrangements; extension of glass forming. Consideration of the application of C.A.M.

SA296 Physical Science

Two hours per week for two semesters
Assessment by semester examinations

A second-year subject in the degree course in manufacturing engineering. A selection of six ten-hour units is made from a range of units offered in physics and chemistry.
Physics units: scientific instrumentation A and B, physical optics systems, physics of non-destructive testing, acoustics; solid state physics, nuclear physics, nuclear energy, biophysics, biomechanics, quantum mechanics, relativity.
Chemistry units: water, energy and fuels, instrumental analysis, industrial processes, practical work.

Textbook
There is no prescribed text.

SC113 Engineering Science: Chemistry

Two hour, per week for two semesters

A first-year subject in the associate diploma course in production engineering providing an elementary understanding of modern chemistry and chemical processes important in engineering. It includes the study of: atomic and molecular structure, the differences between molecular and formula weight; ionic and molecular equations, ionic, covalent and metallic bonding, acids, bases and salts. Also included is a study of the topics: electrolysis, polymerisation, organic chemistry, chemical periodicity, stoichiometry and selected examples of industries preparations of organic and inorganic compounds.
Simple analytical procedures and the interpretation of experimental data will also be discussed.

References

SC194 Chemistry

Three hours per week for two semesters

A first-year subject in all degree courses in engineering which provides students with an appreciation of the chemistry forming the background of engineering studies and practices. The course will be treated so that students are able to recognise its relevance to engineering.

Review of preliminary principles: energy, equilibrium, electrochemistry, organic and inorganic chemistry, materials structure and properties — metals, polymers and ceramics; mechanical properties, fuels and combustion.

Textbook

References

SC271 Biology

Three hours per week for two semesters

A subject in the graduate diploma course in biochemical engineering in which the following areas are studied: cell biology; basic features of major plant and animal groups; genetics; evolution; ecology.

References
Refer lecturer in charge.

SC572 Microbiology

Three hours per week for two semesters

Practical work for this subject must be taken by students taking the graduate diploma course in biochemical engineering.

All students should have passed SC582 Engineering Biochemistry or be studying it concurrently.

Assessment is made on the basis of a final examination.

A subject in the graduate diploma course in biochemical engineering designed to provide basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilisation and antisepsics, microbial anatomy, physiology and growth, and systematics. Basic material is developed to illustrate the use of microorganisms in processes such as fermentation, food processing and analysis, antibiotic assays, cheese production and other selected aspects of microbiology relevant to Australian industry. Practical work designed to show the essential features of each of the above areas. Emphasis is on developing the manipulative skills required to handle microbes and to maintain sterile conditions.

References

SC582 Engineering Biochemistry

Three hours per week for two semesters

Practical work associated with this subject is not taken by students taking the graduate diploma course in biochemical engineering. Assessment is based on semester examination and assignments.

A subject in the graduate diploma course in biochemical engineering in which the following areas are studied: bioenergetics; structure-function relationships of biological compounds; catabolic and anabolic pathways; integration of metabolism; enzyme kinetics.

References
SC583  Physical Biochemistry
Two hours per week for two semesters
Prerequisite: SC362 Engineering Biochemistry
Assessment is by final examination and assignments throughout the year
A subject in the graduate diploma course in biochemical engineering which is intended to give an understanding of the basic theory of several techniques and to apply these to biochemical problems.
Topics covered include molecular weight determination, optical rotary dispersion, X-ray crystallography, spectroscopy, isotopes and enzyme kinetics.
Reference

SK194  Computations
Two hours per week for one semester
A first-year subject in all degree courses in engineering which provides students with an introduction to: the use of calculators and digital, analogue and hybrid computers; digital computer programming; data analysis and numerical methods relevant to the practical solution of engineering problems.

SK294  Computer Programming
One hour per week for one semester
A second-year subject in the degree course in electrical engineering which introduces students to algorithmic processes; editors, compilers, task builders and interpreters; elements of FORTRAN and BASIC languages; functions and sub-routines; use of library routines.

SK296  Computer Programming
One hour per week for one semester
A second-year subject in the degree course in manufacturing engineering which provides practical programming experience of BASIC and FORTRAN and application to simple problems in product engineering. Students will be expected to complete several programming assignments. These will involve writing programs and using or modifying existing programs.

SK298  Computer Programming
One hour per week for two semesters
A second-year subject in the degree course in mechanical engineering which instructs students in languages and procedures relating to computer usage so that subsequently they may use computers as engineering tools for computations and simulations. Instruction and practice is in a high level language, BASIC; other languages; simulation packages; use of pre-programmed libraries; discussion of data base management systems, low level languages.

SK390  Computer Programming
One hour per week for one semester
A third-year subject in the degree course in civil engineering which extends students' knowledge of the application of computers in solving engineering problems. Advanced aspects of FORTRAN or other suitable programming languages, including sub-programs, non-numeric applications and file-handling on magnetic media. The course has a strong emphasis on practical work and students will be expected to devise suitable programming projects which are associated with their course.

SK496  Computer Applications
Two hours per week for one semester
A fourth-year subject in the degree course in manufacturing engineering which is intended to develop skill in writing programs in APL, BASIC and/or FORTRAN, of increasing levels of difficulty. Use of packages relevant to production engineering, and interpretation of results. Use of on-line programs and modifying them to suit individual problems. Simulation of machining operations and manufacturing processes.

SK527  Computing Techniques
Three hours per week for two semesters
Practical programming work
Assessment is by progressive assignments and major project
An optional subject in the graduate diploma course in industrial management which consists of a selection from: algorithms and algorithmic processes, advanced high level language techniques, special purpose languages, manufacturing and engineering design and data-base systems, simulation techniques, hardware considerations, scientific and engineering computer system specification, costing and management, software libraries, time-share networks and information services.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

SK631  Computer Programming
Two hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management. Introduction to algorithmic processes. Functions and sub-routines use of library routines. Practical programming experience of BASIC and application to simple problems. Exercises in writing programs and using or modifying existing programs.

SK891  Computer Appreciation
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems Brief introduction to computing, covering basic features of hardware, program languages and job control languages. Planning software: consider the range and use of existing software for statistical, mathematical and planning applications. Application; demonstrate the use of one or more planning tools, with emphasis on compatibility in detail between data, analysis method and application of output.

SM113  Engineering Mathematics
Four hours per week for two semesters
A first-year subject in the associate diploma course in production engineering in which emphasis is on consolidation of basic mathematical skills, and understanding of concepts in the areas of algebra, trigonometry and calculus.

SM191  Computations
Three hours per week for first semester and two hours per week for second semester
A first-year subject in the diploma course in building surveying, intended to develop manipulative skills in mathematics and computing techniques for use in later subjects.
Statistics: data presentation and interpretation; regression, correlation; distribution; statistical inference. Calculus: functions and their inverses, graphs; differentiation; integration methods, use of tables; partial differentiation; differential equations, concepts, direct methods. Approximate integration: trapezoidal and Simpson methods. Linear algebra: matrices; determinants; inverse matrix; solution of system of equations. Introduction to the use of computer equipment: description and demonstration of analogue, digital and hybrid machines; types of problems suited to each type of machine. Elementary digital programming using a procedural language; language syntax (BASIC or FORTRAN), program and data structure; programming elementary applications, algorithms and programs for some of the mathematics material described above, selected exercises directly relevant to building surveying.
SM194 Engineering Mathematics

Three hours per week for two semesters

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.

References
Shenk, A. Calculus and Analytic Geometry California, Goodyear, 2nd edn, 1979

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.


Textbooks
Spiegel, M.R. Advanced Mathematics for Engineers and Scientists. N.Y., McGraw-Hill (Schaum), 1968

References

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.


References

SM311 Engineering Mathematics

Two hours per week for two semesters

A third-year subject in the degree course in electrical engineering.


Reference

SM392 Engineering Mathematics

Three hours per week of integrated instruction and practice for one semester

A third-year subject in the degree course in civil engineering.

Introduction to finite difference methods for initial and boundary value problems in ordinary and partial differential equations. Large matrix problems.

References

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 coordinates.

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.


Textbook

Reference

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.

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.

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. Mathematical decision theory.

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.
Mathematical programming. Queuing theory.

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.

SM598  Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
An elective subject in the final year of the degree course in mechanical engineering.

SM601  Statistical Techniques
Three hours per week for one semester
A subject in the graduate diploma course in transportation systems.
Statistical estimation: revision of basic distribution, tests of hypotheses (parametric and non-parametric), confidence intervals, goodness of fit tests. Regression analysis: revision of matrix analysis, linear and multiple regression. Design and analysis of experiments: one-way analysis of variance, two-way analysis of variance with interactions. Survey techniques: sampling plans, questionnaire design, measurement and analysis.

SM623  Engineering Mathematics
Three hours per week for two semesters
A subject in the graduate diploma course in civil engineering.

References

SM631  Mathematics
Four hours per week for one semester
A subject in the graduate diploma course in telecommunication systems management.

References
A. A. Shenk, Calculus and Analytic Geometry, California, Goodyear, 2nd edn, 1979
G. Thomas, Calculus and Analytic Geometry, Reading, Mass., Addison-Wesley, 5th edn, 1979

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, S.I. 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.
SP194  Physics

Three hours per week for two semesters
Assessment by semester examinations 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; thermodynamics; electricity and magnetism; gravitation; fluid mechanics; geometrical and physical optics; kinetic theory of gases; atomic physics; structure and properties of solids.

The practical course is comprised of fourteen experiments on dynamics, wave motion, electricity and magnetism, thermal radiation, properties of matter, physical optics, atomic physics.

References

SP294  Engineering Physics

Two hours per week for two semesters
Assessment by examination

A second-year subject in the degree course in electrical engineering.

Quantum physics and quantum optics. Wave-particle dualism. Schrödinger's equation and probability; uncertainty principle. Applications to tunnel effect; laser and maser action; laser communication, holography. Review of solid state physics of electronic devices and materials in current use and in development. Electronic statistics and noise. 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 fusion and fusion.
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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 should have completed year nine in a technical school with passes in the appropriate subjects; passed a course equivalent to form three at a technical school, or have been accepted by the Industrial Training Commission as being educated to a standard sufficient to enable procedure with the subjects comprising the first year of the relevant course.

To enable candidates who have left school before reaching the standard of education required to commence an apprenticeship, some eastern suburbs regional colleges and schools provide a qualifying course. This course entails instruction in mathematics, drawing, science and English.

Having selected a trade, a candidate 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.

After entering into the indenture the Industrial Training Commission will advise the apprentice and the college of the course of study to be undertaken.

Certificate courses

Certificate of Business Studies
Standard entrance requirement is Leaving, but mature-age students may also be admitted.

Certificate of Applied Science
Entrance requirements are the successful completion of relevant year eleven subjects, but applicants with work experience may be admitted with less than year eleven level qualifications.

Technician courses
The usual academic requirements for entry to a technician course are passes at year ten level in English, Mathematics, Science.

Applications for entry to a technician course should be made directly to the head of the department which offers the particular course.

Certificate of Technology courses
The usual academic requirements for entry to Certificate of Technology courses are passes in Technical Leaving English, General Mathematics (Technician), Technical Science 'A', Technical Drawing 'A' and an approved course in workshop practice. Metallurgy IT is also a prerequisite for entry into the Certificate of Technology (Mechanical).

For entry into Certificate of Technology (Building) courses, satisfactory completion of the building trades technician certificate or experience and maturity, including five years in the building industry, as approved by the head of department.

Application for entry to a Certificate of Technology course should be made directly to the head of the department which offers the particular course.

Post-apprenticeship and special courses
Each of these courses has different entrance requirements according to the nature of the work experience already achieved or the prerequisites for a work ticket to satisfy government regulations.

Tertiary Orientation Program
Students wishing to enter the applied science and engineering stream should have passed an applied science course at year eleven level. For entry to other streams, students should have completed satisfactorily their year eleven studies.

Students from Eastern Metropolitan (Knox) region technical schools should apply through their respective schools. Application forms will be available from the Principal of each school in October, 1982. The college cannot guarantee places for Knox Region Technical School students whose applications are received after closing dates.

All other applicants should obtain forms from the college

Closing dates for applications

| TOP Science/Engineering | 11 February |
| TOP Humanities         | 3 December  |
| TOP Business            | 3 December  |
Enrolment regulations
All students are required to pay a General Service fee at the time of enrolment. Enrolment is not completed until the fee is paid.
Students whose fees are to be paid by an employer or who are under the NEAT scheme etc. must bring written authority at time of enrolment.

Fees
At the time of going to press the General Service fee for 1983 had not been determined. In 1982 the fees were:
- Full-time: $53.00
- Part-time: $22.50

Refund of fees
Applications for fee refunds must be made by 31 March. The full fee is refunded if the student has not attended classes. In all other cases a service fee of $5.00 is charged.

Student Records Office hours
The Swinburne Technical College Student Records Office, Portable N2, (near 66 Park Street), is open from:

During teaching weeks
8.45am-8.00pm Monday to Thursday
8.45am-5.06pm Friday.

During non-teaching weeks
8.45am-3.06pm Monday to Friday

Amendment to enrolment details
If any of the subjects, after the initial enrolment, have been dropped, or any new subjects added, the student must complete a Subject Variation or Cancellation of Enrolment form which is available from the student's department and lodge it at the Student Records Office within seven days.

Students wishing to record some other enrolment change, e.g. address, employer, should consult the Student Records Office. Students who at any time believe that College records may not show their current address should notify Student Records.

Note
Students must notify the Student Records Office of any withdrawal and/or additions of subjects.
(a) by the end of Term 1 for subjects with a mid-year final examination/result, and
(b) by the end of Term 2 for subjects with an end of year final examination result.
Failure of notification will affect the student's examinations and results in those subjects.

Exemptions
Students seeking exemptions from subjects should complete an Application for Exemption form obtainable from Student Records or from the department controlling the subject. The purpose of granting exemptions is to establish the equivalence of alternative studies. If the same subject has been passed at another institution then it is not necessary to apply for an exemption. For example, if a student has passed Behavioural Science 1A at RMIT and intends including it in a qualification to be completed at Swinburne an exemption is not necessary. In this case the student should simply submit the original RMIT result statements when applying for a certificate at Swinburne.

Particular rules for exemptions
Each certificate has unique guidelines for granting exemptions. It is the responsibility of heads of departments to keep records of the appropriate regulations. 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.

General College regulations

Provision of additional information
If the alternative subject is not part of a widely recognised course such as HSC 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 supporting applications must be submitted for photocopying by an officer of the College, therefore it is recommended that applications be submitted in person to Student Records.
Semester examinations 1982

Examination 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. The final time-table, without room allocations, is posted approximately one month later. Room allocations are posted at least one week before classes end. It is the responsibility of students to ascertain dates and times of examinations. No information is given by telephone.

Conduct of examinations
(1) Unless otherwise stated on the time-tables, morning examinations commence at 8.50am and afternoon examinations commence at 1.20pm.
(2) Students must take their identity cards into the examination room.
(3) Students are required to provide their own slide rules and drawing instruments.
(4) Students are not permitted to enter the room after half an hour has elapsed from the commencement of examinations and are not permitted to leave until half an hour after commencement of examinations.
(5) Four-figure mathematical tables and other information are supplied where necessary.
(6) Unless expressly prohibited, electronic calculators may be used. These must be battery-operated. Students are not permitted to borrow or lend calculators during an examination.

Absence from examinations
Internal examinations
Important extracts from Swinburne Technical College examination and assessment regulations
Students who are absent from an examination due to illness or other reason may apply through the Student Records Office for a special examination. This 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.
(1) Recorrections
The convener (of each subject panel) shall arrange, at the end of a unit or subject, for a further marking by a second examiner of all failed candidates.
(2) Special consideration
The head of department shall arrange, at the end of a unit or subject, for any further scrutiny or testing of borderline candidates, or candidates who have submitted a valid claim based on illness or personal hardship.
(3) Reports on exams
On payment of the appropriate fee within thirty (30) days of publication of the results, a candidate is entitled to a report on a final written examination paper. This does not apply to practical examinations.
Reports are in the following categories:
(a) breakdown of marks allocated for each question, or
(b) A full report.
Applications are made at Student Records, the current fees are $1.00 for a breakdown of marks and $10.00 for a full report.

External examinations
Important extracts from TAFE examination instructions
Special examinations
1 A candidate who is absent from an external examination for medical reasons cannot be permitted to present for the examination at a later date. It is, however, permissible to present for a special examination.
2 In any case of absence by a candidate from a first semester, second semester or annual examination owing to illness or reasons considered satisfactory by the Principal, the candidate may be granted a special examination.

Note
In the case of an absence owing to illness, a covering medical certificate should be lodged at the Student Records Office within 48 hours of the date of the examination.

2.1 Where a supplementary examination is available for the subject, the Principal may grant permission for the candidate to sit for a special examination which will be the supplementary examination in that subject.
2.2 Where no supplementary examination is available the candidate may be granted permission to sit for a special examination in the following circumstances:
2.1.1 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.
2.2.2 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.
2.3 If the Principal is satisfied that a case for a special examination has been established, he should then notify the Middle Level Policy Officer (TAFE) within three days of the external examination, that a special examination may be needed for a particular subject.
Examinations Branch will notify the college whether a special examination should be conducted and the conditions which will apply for that special examination. Official notification of the result of the examination will be made through the Examinations Branch.

3 A candidate who sits for an examination though unwell, cannot be given a special examination and may present for the supplementary examination only if he received the necessary mark laid down for admission to the supplementary examination.

Note
Application for a special examination must be accompanied by evidence of genuine inability to attend the examination and must be lodged within 48 hours of the examination at the Student Records Office.

Recorrections
1 Any candidate at an external examination other than a practical examination may, on payment of a fee of $11.50 have his 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 Managing Director (TAFE) considers that special circumstances warrant the refunding of the fee.

Publication of results
First semester results are displayed at 66 Park Street, but end of year results for Swinburne Technical College students are displayed on the notice board in the Ethel Swinburne Hall as they become available after the examination period. To ascertain from Students Records Office if the results of a particular subject have been released, subject codes must be quoted. Internally assessed examination results are not given over the telephone. Education Department (externally assessed) results may be obtained by telephoning 651 2968 (Examinations Branch).

The following marking scheme is used by the Technical College:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit: 75–100%</td>
<td>C</td>
</tr>
<tr>
<td>Pass: 50–74%</td>
<td>P</td>
</tr>
<tr>
<td>Fail: 0–49%</td>
<td>N</td>
</tr>
<tr>
<td>(Externally assessed) 35–49%</td>
<td>S</td>
</tr>
<tr>
<td>Not completed (Modules only)</td>
<td>NC</td>
</tr>
<tr>
<td>Withdrawn</td>
<td>W</td>
</tr>
</tbody>
</table>

Awards/conferring of certificates
Students eligible to receive certificates are required to make application on the form prescribed, available from Student Records. Applications close on 28 November each year and for applicants who anticipate completing the academic work in the following December exams, the conferring ceremony will be held in August 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 Records. For more information refer to section on exemptions.

Swinburne Technical College Computer Service

Supervisor: Lee Collier, BSc, DipEd, AACS.

The Swinburne Technical College Computer Service provides computing facilities for any department teaching subjects involving computers and/or computer programming.

The computer Service is in Room N9 and houses a Spectrum II Computer with 64K of Central Processor memory plus 1.26 mega-bytes of floppy disk storage. Students actually run their own programs by placing their cards in a Hewlett Packard Mark-sense/Punch Card Reader and removing their print-out from the LA180 printer attached to the computer. Languages currently available to students are BASIC, FORTRAN, COBOL and PASCAL.

Students who find they have problems they cannot solve themselves may obtain programming help from the supervisor.

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

- Education Department Allowance
- Swinburne Council Fund for Tertiary Orientation Program
- Student Aid Fund
- Student Union Aid Fund
- Rotary Swinburne Bursary

Enquiries should be made to the student counselling service. Telephone 819 8025.

Education allowance
The Education Department provides an education allowance for the purchase of text-books and materials will be paid to every full-time student enrolled in the Tertiary Orientation Program year. (The amount for 1982 was $84.00)

Payment is made in two equal instalments. The first instalment is paid as soon as attendance at classes has been confirmed, usually during the month of March. The second instalment is paid during second semester, usually during the month of August. The allowance is paid by cheque to the parent or guardian of the student.

At the time of enrolment, eligible students are requested to apply for an education allowance. Forms are obtainable when enrolling, from the Humanities and Maths/Science Departments of Swinburne Technical College. Failure to lodge the form will result in non-payment of the allowance.

Living allowances
Information regarding a number of living allowance schemes and scholarships 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 1983 the following benefits are available subject to a means test:

### Maximum living allowance
- for dependent students at home: $1,675 p.a.
- for independent students: $2,583 p.a.
- maximum allowance for dependent spouse: $2,220 p.a.
- allowance for dependent child: $520 p.a.

### Incidental allowance
- CAE students: $70 p.a.
- Technical College students: $30 p.a.

Applications may be made after enrolment in a course. Pamphlets and application forms available from student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road.

### Adult Secondary Education Assistance Scheme (ASEAS)
This Commonwealth scheme provides assistance to students aged nineteen years or over at 1 January 1983 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.

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 families of Tertiary Orientation Program students under nineteen, with a limited income. An allowance of up to $726 is paid, subject to a means test.

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 handicapped.

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, 450 St. Kilda Road, Melbourne, 3000.

### National Employment and Training System (NEAT)
Under this scheme, the Commonwealth government re-trains people who do not have employable skills. This is done by providing on-the-job training or by providing financial assistance for part-time or full-time studies. The courses of study approved are dependent upon labour market shortages. Details are available from local Commonwealth Employment Service officers.

### Scholarships

#### Alexander Rushall Memorial Scholarship
This is available to Protestant male students in the Tertiary Orientation Program and in the Technical College. There is a means test. Value $40 to $200 and is tenable for one year. Applications close in December.

#### Dafydd Lewis Trust Scholarship
This is available to male students who will be proceeding with degree level study in 1984, this is subject to a means test and certain conditions of eligibility. Value ranges from $2704 to $4212 p.a. Applications close at end of November 1983.

#### Victorian Overseas Foundation
Scholarships are provided each year for outstanding tradesmen 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 1982 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. Applications close in December. Value: $50 p.a.

#### Walter Lindrum Memorial Scholarship
This is available to a student who is qualified to enter the first year of a degree or diploma course. Value: $400 p.a. Applications close 1 November 1983.

### Conveyance allowance
Full-time students under twenty-one years of age, whose place of residence is situated outside a radius of 4.8 kilometres from Swinburne, may make application for a conveyance allowance. Applications close at end of November 1983.
Students travelling by more than one means of conveyance (rail and bus, tram and bus, etc.) may receive an allowance only for that transport involving the greater fare unless the distance travelled by each form of transport is at least 4.8 kilometres.

Except in special cases approved by the Minister for Education, a conveyance allowance in excess of $231 per annum will not be paid on behalf of any student. Eligible students who use as their means of transport, bicycles, private motor cars or motor cycles are entitled to allowances at the rate of $50 per annum.

**Fare concessions**

Fare concessions forms for full-time students only are available for

- Trains (metropolitan, country and interstate)
- Trams and Tramway Buses
- Private buslines
- Airlines (Ansett and TAA) (Students must be under 19 years of age)

These fare concessions forms are available from Student Records Office on presentation of Student ID cards.

**Note**

Living allowances, scholarships, conveyance allowance and fare concessions are also covered under the general information section.
building division

- Staff ........................................... TC10
- Building courses ...................... TC10
- Plumbing and gasfitting courses ...... TC16
- Registration courses ................... TC15
- Subject details ......................... TC20
Building Division
Head
G.A. Martin, BA, BEd, MMS, MIIE, MAIB

Building Construction Department
Acting Head
E.A. Trotter, CertBuild, TTJC

Academic staff
A. Boltman, GradIEAust, DipEd, MIEAust
A.R. Cottle, DipBldg, DipEd, BuildForemanCert, ColWCert, BldgSurvCert, FAIBS
R.L. D'Argaville, TTJC
S. Day, TTJC
D.R. Dendle, BldgSurvCert, BuildlnspCert, FAIBS, AAI, AArbIA, MBS
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H. Lovig

Building construction courses
The following courses are offered by the Building Construction Department.

Apprenticeships — Carpentry, Joinery or Carpentry and Joinery
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.

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 day 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:

81111E Clerk of Works
81112E Building Foreman
81113E Building Inspector

The Building Inspectors' Certificate course meets the requirements of the Municipal Building Surveyors' Board (Building Inspectors) Regulations, issued under the authority of the Local Government Act 1958, Victoria. The Clerk of Works Technician Certificate course meets the requirements of the Clerk of Works Institute of Australia.

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:

81133B Building Surveyor
81134B Estimating
81135B Building Supervisor
81136B Fire Technology

The building surveyor's course meets the requirements of the Municipal Building Surveyors' Board (Building Inspectors) Regulations, issued under authority of the Local Government Act 1958, Victoria.

Registration courses
Scaffolding course
Scaffolding subjects are conducted which meet the requirements of the scaffolding regulations.

Crane drivers, dogmen and crane chasers course
Riggers 1, 2, 3 and 4 course.

Basic industrial lift truck course
These courses meet the requirements of the Department of Labour and Industry regulations.

Enquiries: Mr. E.A. Trotter, 819 8500
Apprenticeship courses

81101D  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

TB051 Mod. 1  Simple base structures, basic tool skills
TB052 Mod. 2  Simple timber wall framing
TB053 Mod. 3  Simple timber roofing — skillion and gable
TB054 Mod. 4  Simple doors — ledged and braced —fly wire
TB055 Mod. 5  Simple windows — casement frame and sash
TB056 Mod. 6  Timber, fencing and gates
TB057 Mod. 7  Timber villa construction — sub-floor structure to include set of wall plates
TB058 Mod. 8  Timber villa construction — wall framing
TB059 Mod. 9  Timber villa construction — ceiling and gable roof framing
TB060 Mod. 10  Timber villa construction — simple hip roofing
TB061 Mod. 11  Door and door frames (domestic)
TB062 Mod. 12  Window joinery — double hung sash with patented balances rectangular louvre
TB063 Mod. 13  Window joinery — double hung sashes in box frame
TB064 Mod. 14  Simple stairs — timber and concrete
TB065 Mod. 15  Brick veneer construction and hand saw sharpening
TB066 Mod. 16  Hip and valley roofing
TB067 Mod. A51/B51  Concrete formwork
TB068 Mod. A52  Hip and valley roofing 1 (equal pitch)
TB069 Mod. A53/B53  Internal fixing
TB070 Mod. A54/B54/C54  Star building 1
TB071 Mod. A57  Hip and valley roofing 2 (unequal pitch)
TB072 Mod. A58  Shoring, centres and levelling
TB073 Mod. B52  Formwork for concrete and systems
TB074 Mod. B55  Industrial roofing, trusses and ceilings
TB075 Mod. B57  Site works, setting out and levelling
TB076 Mod. B58  Large centres, shoring and trenches
TB077 Mod. C51/D51  Joinery 1 (doors, windows and louvres)
TB078 Mod. C52/D52  Joinery 2 (curved work)
TB079 Mod. C53/D53  Stair building 2
TB080 Mod. C55  Stair building 1
TB081 Mod. C55  Star building 2
TB082 Mod. C55  Star building 1

Technician Certificate — Building courses

81112E  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.

Subjects

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB145 Building English</td>
<td>7</td>
</tr>
<tr>
<td>TB322 Building Construction 2A</td>
<td>7</td>
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<tr>
<td>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB136 Building Mathematics (T)</td>
<td>2</td>
</tr>
<tr>
<td>TB230 Building Science I</td>
<td>2</td>
</tr>
<tr>
<td>TB147 Building Surveying (T) Theory and Maths</td>
<td>5</td>
</tr>
<tr>
<td>TB222 Technical Reports (Building)</td>
<td>1</td>
</tr>
<tr>
<td>TB426 Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB440 Builders Quantities</td>
<td>2</td>
</tr>
</tbody>
</table>
81113E Technician Certificate — Building (Building Inspector) (1976 syllabus)

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 ten 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 structure
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 requirements of the Municipal Building Surveyors' Board (Building Inspectors) Regulations, issued under the authority of the Local Government Act 1958, Victoria.

Students who have completed the Technician Certificate — Building (Building Inspector) are eligible to continue studies leading to a Certificate of Technology — Building Surveyor or other Certificate of Technology — Building course.

Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
<td>2</td>
</tr>
<tr>
<td>TB217</td>
<td>2</td>
</tr>
<tr>
<td>TB222</td>
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<td>TB322</td>
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<tr>
<td>TB323</td>
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<td>TB435</td>
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<td>TB439</td>
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<td>TB412</td>
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<td>TB437</td>
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<tr>
<td>TB425</td>
<td>2</td>
</tr>
<tr>
<td>TB8126</td>
<td>2</td>
</tr>
</tbody>
</table>

81111E 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</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216</td>
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<td>TB220</td>
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<td>TB502</td>
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<tr>
<td>TB510</td>
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<td>TB520</td>
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Table:

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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB8113</td>
<td>2</td>
</tr>
<tr>
<td>TB8111E</td>
<td>2</td>
</tr>
</tbody>
</table>

TC12
### 81120G Building Higher Technician course (part-time)

This course applies to completing students only and is not available to new students.

**Course structure**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB218 Social Science (half-year)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TB219 Advanced Building Graphics (one semester)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TM120 Mathematics 1H</td>
<td>2</td>
</tr>
<tr>
<td>Stage 2</td>
<td>TB322 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB324 Building Services</td>
<td>2</td>
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<tr>
<td></td>
<td>TM220 Mathematics 2H</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB422 Basic Quantities and Estimating (one semester)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB423 Industrial Relations (one semester)</td>
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</tr>
<tr>
<td>Stage 3</td>
<td>TB536 Building Science H (A and B)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TB542 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB543 Building Construction 3B</td>
<td>2</td>
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<tr>
<td></td>
<td>TB546 Practical Structures</td>
<td>2</td>
</tr>
<tr>
<td>Stage 4</td>
<td>TB616 Site Organisation and Administration</td>
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</tr>
<tr>
<td></td>
<td>TH115 Communication 1A (semester one)</td>
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<tr>
<td></td>
<td>TH116 Communication 1B (semester two)</td>
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<td>Stage 5</td>
<td>Electives (two)</td>
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<tr>
<td>Stage 6</td>
<td>Electives (four)</td>
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</table>

### 81133B Certificate of Technology — Building (Building Surveyor) (1976 syllabus)

**Course structure**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB222 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB223 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>TB426 Building Administration and Supervision</td>
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</tr>
<tr>
<td>TB601 Professional Practice of a Building Surveyor</td>
<td>2</td>
</tr>
<tr>
<td>TB436 Practical Inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Applied Mechanics 1</td>
<td>2</td>
</tr>
<tr>
<td>TB437 Statutory Control of Building</td>
<td>2</td>
</tr>
<tr>
<td>TB504 Applied Geomechanics</td>
<td>2</td>
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<tr>
<td>TB427 Building Construction 2C (Structural Analysis)</td>
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<tr>
<td>TB428 Building Construction 3C (Theory of Structures)</td>
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<tr>
<td>TB220 Building Science 1</td>
<td>2</td>
</tr>
<tr>
<td>TS215 Behavioural Studies 1A (semester one)</td>
<td>3</td>
</tr>
<tr>
<td>TS216 Behavioural Studies 1B (semester two)</td>
<td>3</td>
</tr>
<tr>
<td>TB470 Introduction to Building Law</td>
<td>1A and 1B</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td>TB439 Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>TB480 Element of Town Planning</td>
<td>3</td>
</tr>
</tbody>
</table>

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### 81134B Certificate of Technology — Building (Estimating)

**Course structure**

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.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB222 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB223 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>TB452 Industrial Relations 1A and 1B</td>
<td>2</td>
</tr>
</tbody>
</table>

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### 81131B 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</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB222 Building Construction 2A</td>
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</tr>
<tr>
<td></td>
<td>TB223 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB433 Powers and Duties of a Municipal Building Surveyor Part 1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB426 Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB429 Building Practice</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB435 Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TB439 Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>Group B</td>
<td>TH115 English</td>
<td>3</td>
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<tr>
<td></td>
<td>TB431 English Report Writing, Library and Thesis</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB425 Applied Mechanics 1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB412 Building Construction 3A</td>
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<td></td>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB408 Foundations</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB430 Building Science 1A and B (building surveyors)</td>
<td>2</td>
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<tr>
<td></td>
<td>TB434 Powers and Duties of a Municipal Building Surveyor, Part 2</td>
<td>2</td>
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<tr>
<td></td>
<td>TB427 Building Construction—or—C (structural analysis)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB428 Building Construction—or—C (theory of structure)</td>
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</tr>
</tbody>
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### Swinburne Technical College

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81120G Building Higher Technician course (part-time)

This course applies to completing students only and is not available to new students.

**Course structure**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
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</tr>
<tr>
<td></td>
<td>TB217 Building Construction 1B</td>
<td>2</td>
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<tr>
<td></td>
<td>TB218 Social Science (half-year)</td>
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<tr>
<td></td>
<td>TB219 Advanced Building Graphics (one semester)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TM120 Mathematics 1H</td>
<td>2</td>
</tr>
<tr>
<td>Stage 2</td>
<td>TB322 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB323 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB324 Building Services</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TM220 Mathematics 2H</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB422 Basic Quantities and Estimating (one semester)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB423 Industrial Relations (one semester)</td>
<td>2</td>
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<tr>
<td>Stage 3</td>
<td>TB536 Building Science H (A and B)</td>
<td>3</td>
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<td></td>
<td>TB542 Building Construction 3A</td>
<td>2</td>
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<tr>
<td></td>
<td>TB543 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TB546 Practical Structures</td>
<td>2</td>
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<tr>
<td>Stage 4</td>
<td>TB616 Site Organisation and Administration</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TH115 Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>TH116 Communication 1B (semester two)</td>
<td>2</td>
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<tr>
<td>Stage 5</td>
<td>Electives (two)</td>
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<tr>
<td>Stage 6</td>
<td>Electives (four)</td>
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81133B Certificate of Technology — Building (Building Surveyor) (1976 syllabus)

**Course structure**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB222 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB223 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>TB426 Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB601 Professional Practice of a Building Surveyor</td>
<td>2</td>
</tr>
<tr>
<td>TB436 Practical Inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB435 Applied Mechanics 1</td>
<td>2</td>
</tr>
<tr>
<td>TB437 Statutory Control of Building</td>
<td>2</td>
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<tr>
<td>TB504 Applied Geomechanics</td>
<td>2</td>
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<tr>
<td>TB427 Building Construction 2C (Structural Analysis)</td>
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<tr>
<td>TB428 Building Construction 3C (Theory of Structures)</td>
<td>2</td>
</tr>
<tr>
<td>TB220 Building Science 1</td>
<td>2</td>
</tr>
<tr>
<td>TS215 Behavioural Studies 1A (semester one)</td>
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</tr>
<tr>
<td>TS216 Behavioural Studies 1B (semester two)</td>
<td>3</td>
</tr>
<tr>
<td>TB470 Introduction to Building Law</td>
<td>1A and 1B</td>
</tr>
<tr>
<td>TB435 Scaffolding Inspection A</td>
<td>1</td>
</tr>
<tr>
<td>TB439 Scaffolding Inspection B</td>
<td>1</td>
</tr>
<tr>
<td>TB480 Element of Town Planning</td>
<td>3</td>
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</tbody>
</table>

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81134B Certificate of Technology — Building (Estimating)

**Course structure**

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.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB216 Building Construction 1A</td>
<td>2</td>
</tr>
<tr>
<td>TB217 Building Construction 1B</td>
<td>2</td>
</tr>
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<td>TB222 Building Construction 2A</td>
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</tr>
<tr>
<td>TB223 Building Construction 2B</td>
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<tr>
<td>TB412 Building Construction 3A</td>
<td>2</td>
</tr>
<tr>
<td>TB413 Building Construction 3B</td>
<td>2</td>
</tr>
<tr>
<td>TH115 Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication 1B (semester two)</td>
<td>2</td>
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<tr>
<td>TB452 Industrial Relations 1A and 1B</td>
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</table>
### 81135B Certificate of Technology — Building (Building Supervisor)

#### Course structure

<table>
<thead>
<tr>
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<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>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>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>TB521</td>
<td>Services in Building</td>
<td>2</td>
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<tr>
<td>TB566</td>
<td>Practical Structures and Workshop</td>
<td>3</td>
</tr>
<tr>
<td>TB616</td>
<td>Organisation and Administration</td>
<td>2</td>
</tr>
<tr>
<td>TB280</td>
<td>Basic Quantities and Estimating (one semester)</td>
<td>2</td>
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<tr>
<td>TB180</td>
<td>Specifications 1</td>
<td>2</td>
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<tr>
<td>TB220</td>
<td>Advanced Building Graphics</td>
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<tr>
<td>TB320</td>
<td>Building Science 2</td>
<td>2</td>
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<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
<td>2</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
<td>2</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>TB115</td>
<td>Building and Community Development</td>
<td>2</td>
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<tr>
<td>TS215</td>
<td>Behavioural Studies 1A (semester one)</td>
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<td>TS216</td>
<td>Behavioural Studies 1B (semester two)</td>
<td>3</td>
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<tr>
<td>TB550</td>
<td>Network Scheduling for Critical Path Analysis</td>
<td>2</td>
</tr>
<tr>
<td>TB452</td>
<td>Industrial Relations 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB560</td>
<td>Building Plant and Method</td>
<td>2</td>
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<tr>
<td>TB510</td>
<td>Contracts and Building Law</td>
<td>2</td>
</tr>
<tr>
<td>TB380</td>
<td>Specifications 2</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Hours per week

- **2**
- **3**
- **4**
- **2**
- **2**
- **3**
- **2**
- **2**
- **2**
- **2**

### 81136B Certificate of Technology — (Fire Technology)

#### Career potential

The course is generally suitable for students within the following organisations:

1. Operations (fire-fighting organisations, safety officers)
2. Design (installation designers, draughtsmen)
3. Insurance (assessors, insurance surveyors).

#### Entrance requirements

Satisfactory completion of Year 11 (Form 5) or 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 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
- Course total 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>Course Code</th>
<th>Course Title</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TM129)</td>
<td>Applied Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>(TM229)</td>
<td>Basic Fire Chemistry</td>
<td>2</td>
</tr>
<tr>
<td>(TH116)</td>
<td>Communication 1A (semester one)</td>
<td>2</td>
</tr>
<tr>
<td>(TH116)</td>
<td>Communication 1B (semester two)</td>
<td>2</td>
</tr>
<tr>
<td>(TB622)</td>
<td>Principles of Fire Behaviour</td>
<td>2</td>
</tr>
<tr>
<td>(TB623)</td>
<td>Fire-fighting Equipment and its Application</td>
<td>2</td>
</tr>
<tr>
<td>(TB824)</td>
<td>Fire Safety Management</td>
<td>2</td>
</tr>
<tr>
<td>(TB825)</td>
<td>Detection and Suppression Systems</td>
<td>2</td>
</tr>
<tr>
<td>(TB826)</td>
<td>Building Structures and Methods 1</td>
<td>2</td>
</tr>
<tr>
<td>(TB827)</td>
<td>Building Structures and Methods 2</td>
<td>2</td>
</tr>
<tr>
<td>(TB829)</td>
<td>Material Science</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
TB830 Command and Communication (2 units)
TB831 Personnel Emergency Treatment (1 semester) (1 unit)
TB832 Fire Investigation (1 semester) (1 unit)
TB833 Rural Fire Behaviour and Detection (2 units)
TB834 Basic Supervision (2 units)
TB836 Special Hazards (2 units)
TB837 Introduction to Law I, A (1 semester) (1 unit)
TB838 Fire-related Law (1 semester) (1 unit)
TB840 Fire-related Law (1 semester) (1 unit)

Design
TB832 Fire Investigation (1 semester) (1 unit)
TB836 Special Hazards (2 units)
TB837 Detection and Suppression Design I (2 units)
TB838 Detection and Suppression Design II (2 units)
TB839 Introduction to Law I, A. (1 semester) (1 unit)
TB840 Fire-related Law (1 semester) (1 unit)
TB843 Building Services (2 units)

Insurance
TB832 Fire Investigation (1 semester) (1 unit)
TB836 Special Hazards (2 units)
TB837 Detection and Suppression Design I (2 units)
TB839 Introduction to Law I, A (1 semester) (1 unit)
TB840 Fire-related Law (1 semester) (1 unit)
TB843 Building Services (2 units)

Registration courses
The following special courses are conducted in conjunction with the Department of Labour and Industry.

People employed in a position where they are obliged to fulfil the requirements of the Certification of Operators Regulations 1972 and the Scaffolding Act 1971 are required by the Department of Labour and Industry to hold a certificate of competency for the particular job they perform.

Students enrolled in these courses are eligible to apply for a learners' permit from the Department of Labour and Industry. In addition to passing the course a practical on-site test may be required by an inspector before the issuing of a Department of Labour and Industry certificate of competency.

81166B Basic Industrial Lift Truck Course
TB930 This course has been designed on the basis that all trainees will receive a minimum of twenty-four hours practical instruction and eight hours theoretical instruction. In regard to practical training particular attention should be given to the following aspects of Industrial Lift Truck operation. It should be noted that a minimum of twenty-four hours practical instruction is based on the assumption that the trainee holds a licence to drive a motor vehicle. Trainees who do not hold such a licence will obviously require many more hours practical instruction.

Full-time courses of one week's duration are conducted during the day time. Part-time evening classes operate on two evenings per week for four weeks' duration. At the successful completion of these courses a 'probationary' licence is issued by the Department of Labour and Industry.

Special provision is available for testing of persons who already hold a Department of Labour and Industry qualification and who wish to obtain a full fork-lift driver's licence.

81165B Riggers
TB801 The course enables a student to attain the standard which will allow the issue of a Class 1 and 2 Riggers Certificate. It operates on a part-time basis of two nights per week of three hours' duration for one semester.

A Class 1 and 2 Rigger is an adult person engaged in rigging work erecting, dismantling or demolition of buildings, structures and machinery, also rigging work on ships on dock or in industrial plants.

A rigger is normally employed under the supervision of construction engineers, superintendents, supervisors or foremen who have jurisdiction over skilled trades on new construction or major repair work, but is not required to have the benefit of this supervision.

TB803 Riggers 3 Instruction sufficient to enable the rigger to erect, alter or dismantle heavy-duty suspended swing-stage scaffolding.

TB804 Riggers 4 Instruction sufficient to enable the rigger to erect, alter or dismantle light-duty swing-stage scaffolding and boatswain's chair.

81162B Scaffolding Construction
TB901 Class 1 Instruction sufficient to enable the rigger to erect, alter or dismantle pole scaffolding, both tube, and timber and frame scaffolding.

TB902 Class 2 Instruction sufficient to enable the rigger to erect, alter or dismantle cantilever and bracket scaffolding.
**81163B 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.

TB435  Scaffolding Inspection A
TB439  Scaffolding Inspection B

**81164B Crane Drivers, Dogmen and Crane Chasers Course**

TB920  This course is of half-year duration based on three hours per week. Students who are enrolled are eligible to apply for a learner's permit from the Department of Labour and Industry which will allow a person to work in industry as a learner. In addition to passing this course, certain practical tests must be undertaken before a certificate of competency will be issued.

**81165B Riggers**

TB801  Riggers 1  1 semester
TB802  Riggers 2
TB803  Riggers 3
TB804  Riggers 4  1 semester

Enquiries

Enquiries about special courses should be directed to Mr C. Watson. 819 8822 or 819 8502.

**Plumbing and Gasfitting courses**

The following courses are offered by the Plumbing and Gasfitting Department.

**Apprenticeship courses**

Three separate apprenticeship courses are available to serve the classification of the apprenticeship being undertaken.

- **T23 Plumbing — Sanitary, General and Gasfitting (81201D)**
- **T23A Plumbing — Mechanical Services, General and Gasfitting (81202D)**
- **32CDA — Plumbing (81203D)**

T23 and T23A are available as Block release 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.

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 E.C. Bird, Tel: 819 8518.

**Technician courses**

Four separate technician courses are available to serve the specific needs of people involved in the plumbing and mechanical services industry.

- **81210E Technician Certificate — Plumbing (Heating, Ventilation and Air-conditioning)**
- **81211E Technician Certificate — Plumbing (Gasfitting)**
- **81213E Technician Certificate — Plumbing (Sanitary)**

The purposes of these courses is to train qualified tradesmen in the more advanced techniques of the various branches of the plumbing and mechanical services industry.

- **81212E 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 E.C. Bird, 819 8518
Apprenticeship course details

81201D Plumbing — Sanitary, General and Gasfitting

81202D Plumbing — Mechanical Services, 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 solder</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>
</tr>
</tbody>
</table>

Sanitary General and Gasfitting

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
</tr>
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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>TP29</td>
<td>A64 Plumbing — sanitary Theory 3 Final</td>
</tr>
<tr>
<td>TP30</td>
<td>A65 Plumbing — Sanitary General and Gasfitting Practice 3 Final</td>
</tr>
<tr>
<td>TP31</td>
<td>A66 Plumbing — Gasfitting Theory 3 Final</td>
</tr>
<tr>
<td>TP32</td>
<td>A67 Plumbing — General Theory 3 Final</td>
</tr>
</tbody>
</table>

Course structure T23A
Mechanical Services, General and Gasfitting

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP29</td>
<td>Q51 Heating</td>
</tr>
<tr>
<td>TP30</td>
<td>Q52 Ventilating</td>
</tr>
<tr>
<td>TP31</td>
<td>Q53 Water supply</td>
</tr>
<tr>
<td>TP32</td>
<td>Q54 Mild steel pipe</td>
</tr>
<tr>
<td>TP33</td>
<td>Q55 Copper tube and plastic</td>
</tr>
<tr>
<td>TP34</td>
<td>Q56 Heating</td>
</tr>
<tr>
<td>TP35</td>
<td>Q57 Ventilating, air-conditioning and refrigerating</td>
</tr>
<tr>
<td>TP36</td>
<td>Q58 Water supply</td>
</tr>
<tr>
<td>TP37</td>
<td>Q59 Gasfitting</td>
</tr>
<tr>
<td>TP38</td>
<td>Q60 Welding and cutting</td>
</tr>
<tr>
<td>TP39</td>
<td>Q61 Mild steel pipe and plastic</td>
</tr>
<tr>
<td>TP40</td>
<td>Q62 Mild steel section</td>
</tr>
<tr>
<td>TP41</td>
<td>Q63 Copper tube special materials</td>
</tr>
<tr>
<td>TP42</td>
<td>Q64 Plumbing — Mechanical Services Theory 3 Final</td>
</tr>
<tr>
<td>TP43</td>
<td>Q65 Plumbing — Mechanical Services General and Gasfitting Practice 3 Final</td>
</tr>
<tr>
<td>TP44</td>
<td>Q66 Plumbing — Castfitting Theory 3 Final</td>
</tr>
<tr>
<td>TP45</td>
<td>Q67 Plumbing — General Theory 3 Final</td>
</tr>
</tbody>
</table>

Alternate method

Hours per course (Block release)
Modules 1 to 12, four hundred hours per year (five x eighty hours)
Modules 13 to 20, three hundred and twenty hours per year (eight x forty hours)
Modules 21 to 28, three hundred and twenty hours per year (eight x forty hours)

Advanced study subjects of the module course
Students wishing to undertake advanced study subjects may apply to the head of department.

Course structure 32CDA

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No.</th>
<th>Stage No. and Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP901</td>
<td>1</td>
<td>1 Introductory skills (ten units)</td>
</tr>
<tr>
<td>TP902</td>
<td>2</td>
<td>2 Drainage (5 units)</td>
</tr>
<tr>
<td>TP903</td>
<td>3</td>
<td>3 Sanitary and Water Supply (16 units)</td>
</tr>
<tr>
<td>TP904</td>
<td>4</td>
<td>4 Gas and Water Supply (8 units)</td>
</tr>
<tr>
<td>TP905</td>
<td>5</td>
<td>5 Roof and Water Supply (10 units)</td>
</tr>
<tr>
<td>TP906</td>
<td>6</td>
<td>6 Mechanical Services and Water Supply (9 units)</td>
</tr>
<tr>
<td>TP907</td>
<td>7</td>
<td>7 Sanitary</td>
</tr>
<tr>
<td>TP908</td>
<td>8</td>
<td>8 Gas</td>
</tr>
<tr>
<td>TP909</td>
<td>9</td>
<td>9 Roof</td>
</tr>
<tr>
<td>TP910</td>
<td>10</td>
<td>10 Mechanical Services</td>
</tr>
<tr>
<td>TP911</td>
<td>11</td>
<td>11 Welding (pipe)</td>
</tr>
</tbody>
</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 modular course
Students wishing to undertake advanced units may apply to the head of the department.

Hours per course (Day release)
Modules 1 to 12, twelve hours per week. This is achieved by attendance of eight hours one week and sixteen hours the following week
Modules 13 to 20, eight hours per week
Modules 21 to 28, eight hours per week
Technician course details

81210E Technician — Plumbing (Heating, Ventilating and Air-conditioning)

Career potential
The purpose of the course is to train qualified tradesmen 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 tradesmen 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 Principal 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 Gasfitting, Electrical Mechanics, Fitting and Machinery, Refrigeration

Course structure

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Course 1 General</strong>&lt;br&gt;(For students without approved Form V&lt;br&gt;English, Mathematics and Science)</td>
<td></td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science (Physical) 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong>&lt;br&gt;TH240</td>
<td>2</td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science (Physics) 2T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Course 2 Related background studies</strong>&lt;br&gt;TP237 Process Heating</td>
<td>1</td>
</tr>
<tr>
<td>TP316 Fluid Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>TP160 Plant Services Drafting</td>
<td>2</td>
</tr>
<tr>
<td>TB220 Building Science 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong>&lt;br&gt;TP421 Site Supervision and Organisation (Foremanship)</td>
<td>2</td>
</tr>
<tr>
<td>TP310 Contracts and Building Law (Sub contracts)</td>
<td>1</td>
</tr>
<tr>
<td>TP453 Mechanical Services Drafting</td>
<td>2</td>
</tr>
<tr>
<td><strong>Course 3 General practices</strong>&lt;br&gt;TP358 Reticulated Systems 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP450 Instrumentation</td>
<td>1</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong>&lt;br&gt;TP458 Reticulated Systems 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP451 Electrical and Controls</td>
<td>1</td>
</tr>
<tr>
<td><strong>Course 4 Specialist practices</strong>&lt;br&gt;TP440 Air-conditioning 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP349 Refrigeration 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong>&lt;br&gt;TP448 Air-conditioning 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP449 Refrigeration 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP452 Balancing and Commissioning</td>
<td>2</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 eight units from Groups 2 and 3
At least four units from Group 4

81211E Technician — Plumbing (Gasfitting)

Career potential
The course is designed to train qualified tradesmen 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 Principal 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</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st year</strong>&lt;br&gt;TH140</td>
<td>English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd year</strong>&lt;br&gt;TH240</td>
<td>English 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP237</td>
<td>Process Heating (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td>TP238</td>
<td>Fluid Mechanics (1 semester)</td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd year</strong>&lt;br&gt;TP335</td>
<td>Reticulated Systems IT</td>
<td>2</td>
</tr>
<tr>
<td>TP358</td>
<td>Gas Technology IT (fundamentals of gas Technology A and B)</td>
<td>2</td>
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<tr>
<td><strong>4th year</strong>&lt;br&gt;TE161</td>
<td>Electronics B*</td>
<td>2</td>
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<tr>
<td>TP434</td>
<td>Gas Technology 2T A (gas control techniques 1A and B)</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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</table>
| *Electronics A and B equal TE326 Industrial Electronics 11

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
</table>

| **Group 1**<br>TH140 | English 1T | 2 |
| TM130 | Mathematics 1T | 2 |
| TM170 | Science 1T | 2 |
| **Group 2**<br>TH240 | English 2T | 2 |
| TM230 | Mathematics 2T | 2 |
| TM270 | Science 2T | 2 |
| TP237 | Process Heating (1 semester) | 2 |
| TP238 | Fluid Mechanics (1 semester) | 2 |
| **Group 3**<br>TP335 | Reticulated Systems IT | 2 |
| **Group 4**<br>TP349 | Refrigeration 1T | 2 |
| **Advanced or specialist units**<br>TP448 | Air-conditioning 2T | 2 |
| TP449 | Refrigeration 2T | 2 |
| TP452 | Balancing and Commissioning | 2 |

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 eight units from Groups 2 and 3
At least four units from Group 4
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.

Prerequisite
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 Principal 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>Basic Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1 - General</strong></td>
<td></td>
</tr>
<tr>
<td>TH140 - English (1T)</td>
<td>2</td>
</tr>
<tr>
<td>TM130 - Mathematics (1T)</td>
<td>2</td>
</tr>
<tr>
<td>TM170 - Science (Physics) (1T)</td>
<td>2</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong></td>
<td></td>
</tr>
<tr>
<td>TM230 - Mathematics (2T)</td>
<td>2</td>
</tr>
<tr>
<td>TM270 - Science (Physics) (2T)</td>
<td>2</td>
</tr>
<tr>
<td>TP210 - Communication and Technical Reports</td>
<td>2</td>
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<tr>
<td><strong>Group 2 - Related background studies</strong></td>
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<tr>
<td>TP116 - Quantity Surveying (Plumbing)</td>
<td>2</td>
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<tr>
<td>TP110 - Contract and Building Law</td>
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</tr>
<tr>
<td>TP421 - Site Supervision and Organisation (Foremanship)</td>
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<tr>
<td>TP260 - Plan Reading</td>
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</tr>
<tr>
<td>TP262 - Building Science (1A and 1B)</td>
<td>2</td>
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<tr>
<td><strong>Advanced or specialist units</strong></td>
<td></td>
</tr>
<tr>
<td>TP263 - Estimating and Quantity Surv. (Plumbing)</td>
<td>2</td>
</tr>
<tr>
<td>TP261 - Business Practice and Bookkeeping</td>
<td>1</td>
</tr>
<tr>
<td>TP238 - Fluid Mechanics</td>
<td>1</td>
</tr>
<tr>
<td><strong>Group 3 - General building practices</strong></td>
<td></td>
</tr>
<tr>
<td>TP240 - Construction Methods and Practices</td>
<td></td>
</tr>
<tr>
<td>TP420 - Plant and Equipment (Plumbing)</td>
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<tr>
<td><strong>Group 4 - Specialist practices</strong></td>
<td></td>
</tr>
<tr>
<td>TP340 - Pipeline Design A</td>
<td>1</td>
</tr>
<tr>
<td>TP341 - Pipeline Design B</td>
<td>1</td>
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<tr>
<td>TP410 - Drainage Design</td>
<td>1</td>
</tr>
<tr>
<td><strong>Advanced or specialist units</strong></td>
<td></td>
</tr>
<tr>
<td>TP320 - Basic Measuring and Levelling (Plumbing)</td>
<td>1</td>
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<tr>
<td>TP480 - Water Service Design</td>
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</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

**Entrance standard**

Passes in Leaving 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.

**Course structure**

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TP181 - Pipe and Duct Fitting 1T</td>
<td>3</td>
<td>TP181 - Pipe and Duct Fitting 2T</td>
</tr>
<tr>
<td></td>
<td>TP180 - Plant Services Drafting 1T</td>
<td>3</td>
<td>TP280 - Plant Services Drafting 2T</td>
</tr>
<tr>
<td></td>
<td>TP182 - Building (parameters) Appreciation 1T</td>
<td>2</td>
<td>TP262 - Plant Equipment 1T or TP358 - Reticulated Systems 1T</td>
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<tr>
<td></td>
<td>or Approved elective</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2nd year</td>
<td>3</td>
<td>1st year</td>
</tr>
<tr>
<td></td>
<td>TP281 - Pipe and Duct Fitting 2T</td>
<td>3</td>
<td>TP281 - Pipe and Duct Fitting 1T</td>
</tr>
<tr>
<td></td>
<td>TP280 - Plant Services Drafting 2T</td>
<td>4</td>
<td>TP280 - Plant Services Drafting 1T</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TP348 - Air-conditioning 1T</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Approved elective or TP349 - Refrigeration 1T</td>
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<tr>
<td></td>
<td>3rd year</td>
<td>4</td>
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<tr>
<td></td>
<td>TP380 - Plant Services Drafting 3T</td>
<td>4</td>
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<tr>
<td></td>
<td>TP382 - Plant Equipment 2T or TP348 - Air-conditioning 1T</td>
<td>2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Approved elective or TP349 - Refrigeration 1T</td>
</tr>
</tbody>
</table>
Building subject details

Advanced Building Graphics (TB120)
Techniques of graphic communication applied to building.

Air-conditioning 1T (TP348)
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 bulb and dry bulb temperatures and measurement of air conditions and instruments used.

Air-conditioning 2T (TP448)
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.

Applied Geomechanics (TB504)

Balancing and Commissioning (TP452)
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.

Basic Measuring and Levelling (plumbing) (TP320)
To develop the efficient use of levelling instruments, make accurate recording of levels and methods of setting out plumbing installations.

Basic Quantities and Estimating (TB242)
An introduction to quantity taking and estimating in the building industry.

Builders Quantities (TB440)
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.

Building Administration and Supervision (TB426)
Approached from the points of view of the builder, the client and public authorities.

Building Appreciation 1T (TP182)
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.

Building Construction 1A (TB126)
Basic principles of structure. Timber technology. Domestic building construction including timber framing, brickwork, masonry, foundations, footings, roof plumbing, joinery, internal fittings, services, plastering, painting. Simple concrete work.

Building Construction 1B (TB1217)
A folder 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.

Building Construction 2A (TB322)

Building Construction 2B (TB323)
A folder 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.

Building Construction 2C (TB427)

Building Construction 3A (TB412)

Building Construction 3B (TB413)
A folder 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.

Building Construction 3C (TB428)
Design principles applied to structures.

Building Community Development (TB516)
Development of communities and the building used. The interactions of both internal social and economic terms.

Building Mathematics (T) (TB125)

Building Science (T) (TB220)

Building Science 1 (building surveys) (TB430)

Building Science 2 (TB320)
To extend work covered in Building Science 1 and to give students a practical basic working knowledge of the important areas of modern building services.

Building Surveying (T) Theory, Mathematics, Field (TB417)
Areas of plane figures and volumes of solids. Use of levelling instruments (dumpy, theodolite, etc.). Measuring distances, recording observations, datum points, benchmarks, grades, bearings.

Business Practice and Basic Bookkeeping (plumbing) (TP261)
Basic accounting concepts, basic data processing, accounting for contractors, office accounting techniques.

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 4 (TB054), Simple doors — edged and blade — flywire.
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 face 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 roof framing.
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 14 (TB064), Simple stairs — timber and concrete.
Module 15 (TB065), Brick veneer construction hand saw sharpening.
Module 16 (TB066), Hip and valley roofing.
Module A51/B51 (TB071), Concrete formwork.
Module A52 (TB072), Hip and valley roofing 1 (equal pitch).
Module A53/B53 (TB073), Internal fixing.
Module A56/B56/C56 (TB074), Stair building 1.
Module A57 (TB075), Hip and valley roofing 2 (unequal pitch).
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 works, setting out and levelling.
Module B58 (TB060). Large centres, shoring and trenches.
Module C52/D52 (TB081). Joinery I (doors, windows and louvres).
Module C57 (TB083). Stair building 2.
Module C58 (TB084). Stair building 3.

Communication 1A (TH115)
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.

Communication 1B (TH116)
Research and presentation of analytical reports, job briefs and presentations. Group communication skills: meetings, discussions and interviews. Audio-visual techniques and presentations.

Communication and Technical Reports (TP210)
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.

Construction Methods and Practice (plumbing) (TP240)
To develop an understanding of structural systems and their organisation with particular reference to the effect on plumbing systems.

Contracts and Building Law (TB110) and (TP310)
The role of the architect in building, the obligations of the architect and builder, types and conditions of contracts, tenders and building requirements.

Crane Drivers, Dogmen and Crane Chasers (TB920) and (TB921)
A course based on the theoretical requirements for crane drivers, dogmen and crane chasers as defined in the Lifts and Cranes Act, Victoria.

Drainage Design (TP418)
Development of skills in the drafting and design of sanitary drainage installation relating to sewerage regulations. Installation and connection requirements for special apparatus.

Electrical and Controls (TP451)
SI units, AC and DC 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.

English 1T (TH140)
Development of ability to read with comprehension and appreciation of text in oral and written English. Preparation of clear, concise notes and summaries.

English 2T (TH240)

English (Building Technician) (TH145)

English Report Writing (Library and Thesis) (TB431)
see Communication 1TH116.

Estimating and Costing (TB362)
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.

Estimating and Quantity Surveying (plumbing) (TB263)
To develop techniques and skills in estimating, pricing, cash flow and related matters, including pricing, overhead and profit, tenders, risk and fall considerations, progress payments.

Fluid Mechanics (TP238)

Foundations 1A and 1B (TB400)

Gas Technology 1T (TP335) (Fundamentals of gas technology)

Gas Technology 2T (A) (Gas control techniques 1A and 1B) (TP434)
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 and industrial gas utilisation. Particular reference to safety, fault finding and rectification.

Gas Technology 2T (B) (Gas control techniques 2A and 2B) (TP435)
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).

Industrial Electronics 1T (TE326)

Industrial Electronics 2T (TE412)

Industrial Relations 1A and 1B (TS452)
A study of interrelationship of management and the work force in the building industry.

Instrumentation (TP450)
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, flue gases and electrical quantities.

Mathematics 1T (TM130)
Two hours per week, daytime or evening, full year. Pre-requisites: 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, Translations, Graphs, Trigonometry, Factorisation, solution, equations, both linear and quadratic and logarithms. Students enrolled in TM130 usually study Science 1T (TM170) also. These two subjects are time-tabled in a four-hour block.

References
Supplied notes
Mathematics 2T (TM230)
Two hours per week, evening over two semesters. Mathematics 1T, adult entry, or qualifications deemed equivalent by the Mathematics/Science Head of Department. 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.

Mathematics 1A and 1B (1H) (TM120)
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

Mathematics 2H (TM220)
Full-time. Five hours per week, daytime for one semester. Part-time. Two hours per week daytime or evening for two semesters.

Prerequisites: 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 function; integration and antidifferentiation; antidifferentiation; 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:

Network Scheduling for Critical Path Analysis (TB530)
Network planning and construction applicable to the building industry.

Organisation (Plumbing) (TP427)
Dealing with the administrative and supervisory aspects of the foreman's work, with particular reference to management with emphasis on human relations and hand office organisation.

Pipe and Duct Fitting 1T (TP181)
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.

Pipe and Duct Fitting 2T (TP281)
A practical course in the fabrication and installation of different components of a ducted heating system.

Pipeline Design 'A' Sanitary Plumbing 1 unit (TP340)
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.

Pipeline Design 'B' 1 unit (TP341)
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.

Plan Reading (plumbing) 1 unit (TP260)
Review the principles of specification report writing and understand the structure and use of specifications and drawings.

Plant and Equipment (plumbing) 1 unit (TP420)
Basic principles of the care and use of equipment, safety regulations and correct procedures.

Plant Equipment 1T (TP282)
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.

Plant Equipment 2T (TP382)
The study of low velocity, high velocity, duct and multi-zone air-conditioning systems, and associated equipment such as fans, housings, coils, ductwork, mixing boxes, registers, controls and piping.

Plant Services Drafting 1T and 2T 2 units (TP180, TP280)
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.

Plant Services Drafting 3T (TP380)
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.

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.


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 closets, country water supply.


Trade practice: sheet lead, collars and external corners, welding Copper tube bending, jointing and fabrication. Plastics welding and fabrication of Polythene and polyethylene 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 and special services. Pressure ed 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, service areas.

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, pressures, principles and installation, conversion, safety.

Welding and cutting: oxy acetylene, electric and argon techniques.

Modules 1-11

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 shelving.

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 pipework and water supply.

TP907, TP908, TP909, TP910, TP911 Specialist areas under development are roof work, sanitary, gas, mechanical, welding.

Practical Inspection (building) (TB436)

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.

Practical Structures and Practical Workshop (TB366)

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.

Process Heating (TP237)


Professional Practice of a Building Surveyor (TB611)

Administrations and law. Town planning. Building regulations.

Quantity Surveying I and Quantity Surveying H (TB503, TB502)


Quantity Surveying (plumbing) (TP316)

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.

Quantity Surveying 2 (TB552)

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 sander metalwork items.

Refrigeration 1 (TP349)

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.

Refrigeration 2 (TP449)

The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded capacity, control, matching components in a V/C system; absorption refrigeration and heat transfer. System faults in a simple V/C system. Refrigeration piping design. Application of refrigeration for preservation of food and air-conditioning.

Reticulated Systems 1T (TP358)

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.

Reticulated Systems 2T (TP458)

Covers control components, specialised material selection, Standards Association requirements and controlling authorities.

Rigger 1 and 2 (TB801, TB802)

A course designed for an adult person engaged in rigging work erecting, dismantling or demolition of buildings, structures, and machinery.

Rigger 3 (TB803)

Instruction sufficient to enable the scaffoldor to erect, alter or dismantle high heavy-duty suspended scaffolding and heavy duty swing stage scaffolding.

Rigger 4 (TB804)

Instruction sufficient to enable the scaffoldor to erect, alter or dismantle light-duty swing-stage scaffolding and boatswain's chair.

Role and Function of a Clerk of Works (TB520)

A study of terms of employment, ethics and duties of a clerk of works.

Scaffolding Construction (TB901, TB902)

Class 1: Instruction sufficient to enable the scaffoldor to erect, alter or dismantle pole scaffolding, both tube and timber and frame scaffolding.

Class 2: Instruction sufficient to enable the scaffoldor to erect, alter or dismantle cantilever bracket and bracket scaffolding.

Scaffolding Inspection A and B (TB415, TB439)

Covers inspection of scaffolding regulations, defines responsibilities of all persons involved in the provision, erection, and use of scaffolding, including steel tube, frames, suspended cantilever bracket, and miscellaneous equipment.

Science I (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 and chemistry for science, engineering, trade, and other sciences. The topics covered include: electricity and magnetism, advanced units in electric circuits, wave motion, optics, the law of the sine and cosine rule, the law of energy, heat, and work, Newton's three laws of motion, and equilibrium. The course is deemed to be an equivalent for an introductory science course in science or engineering.

Science II (TM170)

Two hours per week, day or evening over two semesters. Prerequisites: Science I, adult entry, or qualification deemed equivalent by the Mathematics and Science, Head of Department. Assessment: Class work (40%) and one final examination (60%). The course is aimed at teaching basic physics in S1. units, vectors, equilibrium, kinetics, Newton's three laws of motion, work power and energy, heat, Ohm's law and basic electric circuits. References are supplied notes. Students enrolled in TM170 normally study mathematics TM170 concurrently, and the two subjects are time-tabled in a four-hour block.

Science 2T (TM270)

Two hours per week, day or evening over two semesters. Prerequisites: Science 2T, adult entry, or qualification deemed equivalent by the Mathematics and Science, Head of Department. Assessment: Class work (40%) and one final examination (60%). The course is aimed at teaching basic physics in S1. units, vectors, equilibrium, kinetics, Newton's three laws of motion, work power and energy, heat, Ohm's law and basic electric circuits. References are supplied notes. Students enrolled in TM270 normally study mathematics TM230 concurrently, and the two subjects are time-tabled in a four-hour block.

References

Supplied notes.
Services in Buildings (TB241)
A study of services, from and within a building, or site, including electrical, mechanical, hydraulic, civil and interior decoration services.

Site Organisation and Administration (TB160)
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.

Site Supervision and Organisation (Foremanship) (TP421)
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.

Site Supervision (Plumbing) (TP426)
Dealing with the administrative and supervisory aspects of the foreman's work, with particular reference to on-site construction projects.

Social Science (TB134)
Participation in activities which will provide a background for students following a building career.

Specifications (1A and 1B (TB280))
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 also proposes that Specifications 1 be a prerequisite to Specifications 2.

Specifications, Drawing Interpretations and Co-ordination (TB419)
Study of the interrelationship of contract documents (including drawings, specifications and related architect's instructions) and the documentation of matters arising therefrom.

Statutory Control of Buildings (TB437)
Administration and law, Regulatory control and inspectional procedure.

Structural Design Drafting 1A and 1B (TB307)
Usual prerequisites for this subject are passing in Structural Drafting and Structural Practices. The subject is concerned with design drafting practice in a variety of realistic situations.

Structural Design Drafting 2A and 2B (TB407)
Further work in extension of Structural Design Drafting 1A and 1B. Structural Design and Drafting 3C and 2D (TB197). Further work in extension of Structural Design Drafting 1A, 1B, 2A, and 2B.

Structural Drafting 1A and 1B (TB195)
Usual prerequisite for this subject is a pass in Leaving Technical Drawing A. Course includes practical drafting and theories on the use of steel sections, splicing, connections, standard drafting practice, structural terms, reinforced concrete, timber.

Structural Drafting 2A and 2B (TB295)
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 buildings, composite type buildings, concrete projects, detailing from an engineering specification.

Structural Mechanics 1A and 1B (TB197)
Review of statics, external forces acting on rigid bodies, principles of equilibrium, internal forces within rigid bodies, load distribution characteristics of materials, Structural joints and connections Laboratory work.

Structural Mechanics 3A and 3B (TB397)
Further extension of Structural Mechanics 1A and 1B. 2A and 2B.

Structural Mechanics 2A and 2B (TB197)
Extends structural mechanics 1A and 1B and deals with more complicated structures.

Structural Practices 1A and 1B (TB196)
Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial type buildings.

Structural Practices 2A and 2B (TB296)
Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

Survey Cartographic Drafting 1H (TB132)
Introduction to modern survey instrumentation. Topographical, hydrographic, underground geodetic and cadastral surveys. Introduction to town planning. Drafting and examination of field notes.

Survey 1H Parts 1 and 2 (TB141, TB250)
Details of this subject have not yet been determined.

Technical Reports (building) (TB222)
Summaries, presentations, records used in industry, types of reports (written and oral). Logical argument and the use of the spoken word. Use of library material. Use of visual aids in reports.

Water Service Design (TP480)
To develop skill in the design and drafting of water supply distribution, flushing, flushing services and fire services.

Certificate of Technology (Fire Technology)
Core subject details

Applied Mathematics (TM129) 2 units
Basic mathematical operations, indices, algebraic manipulations, trigonometric functions, graphs and statistics, heat and fluid mechanics.

Basic Fire Chemistry (TM292) 2 units
General chemistry, introductory organic and inorganic chemistry, fundamentals of thermodynamics, chemical and thermodynamic properties of some common materials.

Building Structures and Methods 1 (TB826) 2 units
Building Structures and Methods 2 (TB827) 2 units
To impart an understanding of the general principles, methods of construction and protection for all types of structures - domestic commercial and industrial low-rise, multi-storey and special structure, and to acquaint the students with all types of materials used in these structures. This subject will also include plan reading and interpretation of drawings, design criteria and function.

Communication 1A (TH115) 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.

Communication 1B (TH116) 1 unit
Research and presentation of analytical reports, job briefs and specifications, group communications skills, meetings, discussions and interviews, audio-visual techniques and presentations.

Detection and Suppression System (TB825) 2 units
To enable students to evaluate, design and interpret plans, designs and specifications of different types of fire detection and suppression systems.

Fire-fighting Equipment and Its Application (TB823) 2 units
Theory and application of fire-fighting media, vehicles and appliances, aerial equipment, special appliances and protective equipment.

Fire Safety Management (TB824) 2 units
Community laws and regulations, psychology of individual or group behaviour, stress and fire drill situations, fire safety management planning.

Material Science (TB292) 2 units
Material behaviour in fire conditions, structural behaviour under fire load. Visits to experimental testing stations are included in this subject.

Principles of Fire Behaviour (TB222) 2 units
Combustion, process of burning and fire tests. Laboratory work and visits will be incorporated into this subject.
Elective subject details

Basic Supervision (TS433)

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, organisation 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.

Building Services (TB843) 2 units
Mechanical vertical and horizontal transportation, heating, ventilating and air conditioning services, hydraulic services, electrical services and specialist services.

Command and Communication (TB830) 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.

Detection and Suppression Design 1 (TB837) 2 units
Develops students' skills in designing fire sprinkler systems, fire alarm systems based on relevant Australian standards.

Detection and Suppression Design 2 (TB838) 2 units
Further develop students' skills in design of sprinklers, alarm systems and other specialised systems.

Fire Insurance (TS321) 1 unit
Risk assessment, rating principles, rating factors, previous factors, policy clauses, claims and reinsurance.

Fire Investigation (TB832) 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.

Fire-related Law (TB840) 1 unit
The role of tests, standards and codes, acts and regulations, legal responsibility and liability of personnel involved in fire situations.

Introduction to Insurance (TS320) 1 unit
Insurance concepts, history, world and Australian markets, departments within an organisation, categories of principles, types of insurance policies.

Introduction to Law 1A (TS243) 1 unit

Personnel Emergency Treatment (TB831) 1 unit
This subject equips the students with basic first-aid to enable them to assist in an emergency situation. The course follows the syllabus set out in the St John's Ambulance Association Fire-Aid Course.

Rural Fire Behaviour and Detection (TB833) 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

Special Hazards (TB836) 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.
business studies division

- Staff .................................. TC28
- Business courses ........................... TC28
- Subject details ........................ TC35
- Kew High Evening School Department .... TC39
Business certificate courses

The following certificate courses are offered by the Business Studies Department:

- Accounting
- Book-keeper/Typist
- Office
- Personnel
- Production
- Sales and Marketing
- Secretarial
- Supply
- Work Study

Students may complete the Accounting Certificate or Book-keeper/typist Certificate or the Secretarial Certificate on a full-time day basis over two years.

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 course 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
- Clothing
- Credit management
- Customs procedures
- Hospital procedures
- Insurance — general
- Insurance — life
- Law
- Materials handling
- Packaging
- Public relations
- Real estate
- Records administration
- Safety
- Timber
- Transport
- Travel
- Tourism

Any students interested in these specialist areas should also enquire for advice regarding a plan of study.

Entrance requirements

The usual entrance requirement is Leaving standard of education (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, accounting 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 records. The Head of Business Studies Department should be consulted if the student requires advice.
(b) Where more than twelve units are applied for:
these applications can only be granted by the TAFE Board. Application forms are available from and must be submitted to the Head of Business Studies Department.

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 be given on 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) If alternative subjects provide a suitable 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
Additional information 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 Records 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 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 students are 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 Division,
Telephone 819 8165

Changes in course structures

The course structures listed below are those applicable in 1982. These may be amended from time to time. Students must get a current course structure when they enrol and should retain that course structure to facilitate subsequent enrolments. This is because students must complete their certificate by following the course structure current in the year of their first enrolment or any subsequent structure. Students will not be disadvantaged by any changes in course structure. No allowance will be made for students who follow a course structure which was out of date when they first enrolled.

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 Middle Level English 1A and 1B.

and

(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.

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.
### 823306 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 Leaving level (Year 1) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

<table>
<thead>
<tr>
<th>Compulsory units</th>
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<tbody>
<tr>
<td>TH126 Middle-level English 1A</td>
</tr>
<tr>
<td>TH127 Middle-level English 1B</td>
</tr>
<tr>
<td>TS101 Accounting 1 (Bookkeeping to trial balance)</td>
</tr>
<tr>
<td>TS102 Accounting 2 (Preparation of financial reports)</td>
</tr>
<tr>
<td>TS203 Accounting 3 (Accounting systems)</td>
</tr>
<tr>
<td>TS204 Accounting 4 (Partnership and company accounting)</td>
</tr>
<tr>
<td>TS205 Accounting 5 (Financial management)</td>
</tr>
<tr>
<td>TS120 Introduction to Business Data Processing (two units)</td>
</tr>
</tbody>
</table>

Plus five of the following units

| Accounting 6 (Costing elements) |
| Accounting 7 (Costing systems) |
| Accounting 8 (Internal control and auditing) |
| Accounting 9 (Budgeting procedures) |
| Accounting 10 (Accounting theory) |
| Accounting 11 (Introduction to taxation) |
| Accounting 12 (Income tax law and practice) |
| Accounting 13 (Government Finance and Accounting Part 1) |
| Accounting 14 (Government Finance and Accounting Part 2) |

Plus four of the following units

| Business Mathematics 1A |
| Business Mathematics 1B |
| Introduction to Economics 1A |
| Introduction to Economics 1B |
| Introduction to Law 1A |
| Introduction to Law 1B |

Two elective units

Any of the above units not already selected

Any other Certificate of Business Studies except some units offered by other colleges but not offered by Swinburne e.g. Small Business Procedures 1A 1B

**Note**
Twenty units are required for the certificate. The groupings shown above must be observed.

**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.

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### 82339G Certificate of Business Studies — Book-keeper/Typist

**Career potential**
The general aim of this certificate course is to provide a middle-level vocational course designed for students who wish to become book-keepers/typists rather than secretaries.

The course provides an excellent background in accounting while a high degree of typewriting skill is achieved. After completion of the course students will have developed skills suitable for employment in accounting firms, legal firms, accounting departments of large firms and other professional offices.

**Prerequisites**
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 1) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

**Course structure**

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<td>TS102 Accounting 2 (Preparation of financial reports)</td>
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<td>TS103 Accounting 3 (Accounting systems)</td>
</tr>
<tr>
<td>TS104 Accounting 4 (Partnership and company accounting)</td>
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<tr>
<td>TS205 Accounting 5 (Financial management)</td>
</tr>
<tr>
<td>TS120 Introduction to Business Data Processing (two units)</td>
</tr>
</tbody>
</table>

Any four other Group 1 Certificate of Business Studies units which include the following.

| Behavioural Studies 1A |
| Behavioural Studies 1B |
| Introduction to Economics 1A |
| Introduction to Economics 1B |
| Introduction to Law 1A |
| Introduction to Law 1B |
| Industry and Society |
| Introduction to Business/Service Organisations |

| Business Mathematics 1A |
| Business Mathematics 1B |

Other Group 1 units may be taken if desired

**Five elective units**

Any other Certificate of Business Studies units not already selected

**Note**
Twenty units are required for the certificate. The groupings shown above must be observed.

**Duration of course**
This course is offered on a two year full-time basis only.
823326 Certificate of Business Studies — Personnel

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 Leaving Level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle level English 1A
TH127 Middle level English 1B
TM110 Business Mathematics 1A
TS117 Office Practices 1A
TS118 Office Practices 1B
TS101 Accounting 1 (Bookkeeping to trial balance)
TS102 Accounting 2 (Preparation of financial reports)
TS224 Middle-management Practices A (Planning)
TS225 Middle-management Practices B (Organisation)
TS224 Middle-management Practices C (Staffing)
TS235 Middle-management Practices D (Leadership)

Plus two units from Group 2 Business Studies units. These include the following subjects; others may be taken if desired:
TS103 Accounting 3 (Accounting systems)
TS204 Accounting 4 (Partnership and company accounting)
TS205 Accounting 5 (Financial management)
TS310 Salesmanship 1
TS311 Salesmanship 2
TS170 Supply Procedures 1A
TS171 Supply Procedures 1B
TS120 Introduction to Business Data Processing (2 units)

Plus seven elective units from
Any Certificate of Business Studies units not already selected

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course in a part-time evening basis.

82338C Certificate of Business Studies — Office

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. office supervisors.
(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 Leaving Level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH126 Middle level English 1A
TH127 Middle level English 1B
TM110 Business Mathematics 1A
TS117 Office Practices 1A
TS118 Office Practices 1B
TS101 Accounting 1 (Bookkeeping to trial balance)
TS102 Accounting 2 (Preparation of financial reports)
TS224 Middle-management Practices A (Planning)
TS225 Middle-management Practices B (Organisation)
TS224 Middle-management Practices C (Staffing)
TS235 Middle-management Practices D (Leadership)

Plus two units from Group 2 Business Studies units. These include the following subjects; others may be taken if desired:
TS103 Accounting 3 (Accounting systems)
TS204 Accounting 4 (Partnership and company accounting)
TS205 Accounting 5 (Financial management)
TS310 Salesmanship 1
TS311 Salesmanship 2
TS170 Supply Procedures 1A
TS171 Supply Procedures 1B
TS120 Introduction to Business Data Processing (2 units)

Plus seven elective units from
Any Certificate of Business Studies units not already selected

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year on a full-time basis with the second half of the course in a part-time evening basis.
Membership of associations

Students who are undertaking this course are eligible to apply for student membership of the Institute of Personnel Management of Australia. To gain professional membership of the IMPA one must be employed in the personnel area and have completed the course by the end of 1986. Those completing after this date will be eligible for associate membership only. Details on progression from associate to full professional membership may be obtained from the Institute of Personnel Management of Australia.

823346 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 managers.

(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 Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure

Compulsory units
- TH126 Middle-level English 1A
- TH127 Middle-level English 1B
- TM110 Business Mathematics 1A
- TM111 Business Mathematics 1B
- TS128 Industry and Society
- TS129 Introduction to Business/Service Organisations
- TS215 Behavioural Studies 1A
- TS216 Behavioural Studies 1B
- TS350 Production Techniques 1A
- TS351 Production Techniques 1B
- TS352 Production Techniques 2A
- TS353 Production Techniques 2B
- TS410 Supply Procedures 1A
- TS411 Supply Procedures 1B
- TS420 Supply Procedures 2A
- TS421 Supply Procedures 2B

Four elective units

Any other Certificate of Business Studies units

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

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.
82335G 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. sales supervisors, sales managers.
(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 Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TH110 Business Mathematics 1A
TH111 Business Mathematics 1B
TS238 Introduction to Economics 1A
TS239 Introduction to Economics 1B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS260 Salesmanship 1 (Previously Sales 1A)
TS261 Sales Management 2 (Previously Sales 2B)
TS227 Marketing Principles 1 (Previously Marketing Principles and Practice A)
TS228 Marketing Principles 2 (Previously Marketing Principles and Practice B)
TS101 Accounting 1 (Books kept to trial balance)
TS102 Accounting 2 (Preparation of financial reports)

Two elective units
Any other Certificate of Business Studies units not already selected, it is recommended that students include TS262 Promotional Techniques.

Note
Twenty units are required for the certificate. The grouping shown above must be observed.
TS160/TS161 is a prerequisite for TS260/TS261
TS260/TS261 is a prerequisite for TS277/TS278

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 this course are academically qualified for:
— admission to the Australian Marketing Institute at Associate level provided age and experience requirements are met
— admission as Associate members of the Australia Institute of Management.

823376 Certificate of Business Studies — Secretarial

Career potential
The general aim of this certificate course is to provide a range of middle-level vocational courses designed for students who wish to become secretaries to middle-level top management. Students are admitted with or without a background of stenographic skills, additional time being allocated within the course for the development of these.

Prerequisites
Students are eligible to enter this course of study if they have completed satisfactorily an approved course at Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126 Middle-level English 1A
TH127 Middle-level English 1B
TS180 Advanced Business Typewriting 1A
TS181 Advanced Business Typewriting 1B
TS165 Secretarial Practice A
TS166 Secretarial Practice B
TS280 Advanced Business Typewriting 2A
TS281 Advanced Business Typewriting 2B
TS265 Secretarial Projects A (2 unit value)
TS266 Secretarial Projects B (2 unit value)
TS190 Shorthand (Full year non-credit subject)

Any four other Group 1 Certificate of Business Studies units. This group includes the following units, others may be taken if desired.
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS239 Introduction to Economics 1A
TS243 Introduction to Economics 1B
TS244 Introduction to Law 1A
TS245 Introduction to Law 1B
TS220 Industry and Society
TS229 Introduction to Business/Service Organisations
TM110 Business Mathematics 1A
TM111 Business Mathematic 1B

Four elective units
Any other four Group 1 Certificate of Business Studies units. This group includes the following units, others may be taken if desired.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
The course is offered on a two year full-time basis only.
82333G  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 Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126  Middle-level English 1A
TH127  Middle-level English 1B
TM110  Business Mathematics 1A
TM111  Business Mathematics 1B
TS243  Introduction to Law 1A
TS244  Introduction to Law 1B
TS170  Supply Procedures 1A
TS171  Supply Procedures 1B
TS270  Supply Procedures 2A
TS271  Supply Procedures 2B
TS129  Introduction to Business/Service Organisations

Plus one of the following units
TS224  Middle-management Practices A (Planning)
TS225  Middle-management Practices B (Organisation)

Plus four of the following units
TS150  Production Techniques 1A
TS151  Production Techniques 1B
TS101  Accounting 1 (Bookkeeping to trial balance)
TS206  Accounting 6 (Costing elements)
TS207  Accounting 7 (Costing systems)
TS120  Introduction to Business Data Processing
(2 units)

Other Costs, Materials anc 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.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year 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.

82336G  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 Leaving level (Year 11) or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail
Compulsory units
TH126  Middle-level English 1A
TH127  Middle-level English 1B
TM110  Business Mathematics 1A
TM111  Business Mathematics 1B
TS129  Introduction to Business/Service Organisations
TF101  Work Study 1 (Method Study)
TF102  Work Study 2 (Implementation)
TF103  Work Study 3 (Time Study)
TF104  Work Study 4
(Predetermined Motion Time Standards)
TF284  Work Methods Improvement 2A
TF285  Work Methods Improvement 2B
TF286  Work Methods Improvement 2C
TF287  Work Methods Improvement 2D
TF282  Work Measurement 2A
TF283  Work Measurement 2B
TF382  Work Measurement 3 (2 units)

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.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
This course is offered on a part-time evening basis or the first half of the course can be completed in one year 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 Licentiate members of the Institute of Industrial Engineers.
Business subject details

**Accounting (TS009)** Territory Orientation Program subject

Full-time 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 and analysis and interpretation of final reports.

**Accounting 1 (TS101)** (Previously Accounting 1A) (1 unit)

Book-keeping to trial balance — forms of business ownership and types of business activities. Basic book-keeping requirements for business records and basic business documents to maintain records. Complete manual book-keeping process for sole trader service and trading businesses (using physical inventory method only), including bank reconciliation statements, petty cash system, and subsidiary ledgers for debtors and creditors.

**Accounting 2 (TS102)** (1 unit)

Preparation of financial reports. Summary of entire book-keeping process from journal and subsidiary ledgers to final reports. Journal and ledger recording of balance day adjustments, closing entries and reversing entries. Classified revenue and expense statements and balance sheet from trial balance with adjustments for a sole proprietor in both a service and trading organisation. Final accounting reports for a sole proprietor, using a single entry system or book-keeping, showing department contributions and the revenue statement for a manufacturing organisation. Revenue statements incorporating the allocation of expenses. Records and accounts between head office and a maximum of two branches with goods transferred at cost. Consolidated reports of head office and one branch incorporating the allocation of expenses. Records and accounting standards for clubs and societies.

**Accounting 3 (TS103)** (Previously Accounting 1B) (1 unit)

Accounting systems. Relevance of and necessity for flow charting and coding of data within accounting systems. Essential features of equipment, basic procedures using either manual, semi-automatic or electronic equipment. Essential features of control and recording for the following systems using either manual, semi-automatic or electronic equipment: stock, payroll, debtors, creditors, cash receipts and payments, and fixed assets. 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)** (Previously Accounting 2A) (1 unit)

Partnership and Company Accounting. Essentials differences between partnership 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 documents 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 obligations of 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)** (Previously Accounting 2B) (1 unit)


**Accounting 6 (TS206)** (Previously Accounting 2C) (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)** (Previously Accounting 2D) (1 unit)


**Accounting 8 (TS208)** (Previously Accounting 2E/2F) (1 unit)


**Accounting 9 (TS209)** (Previously Accounting 2G) (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 COGOA.

The unit also covers alternative accounting methods for leases, company taxation and intercorporate investments.

**Accounting 11 (TS211)** (Previously Accounting 2H) (1 unit)

Introduction to taxation. Basic income tax procedures, preparation of income tax returns for salary and wage earners and sole traders, group tax, provisional tax, use of the Income Tax Assessment Act.

**Accounting 12 (TS212)** (Previously Accounting 2I) (1 unit)

Income Tax Law and Practice. Preparation of returns for sole traders, partnerships, companies 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 Act and Treasury regulations.

**Accounting 14 (TS214)** (1 unit)

Government Finance and Accounting Part 2. Accounting for trading organisations and non-trading 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.
Advanced Business Typewriting 1A (TS180) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, typescript, etc.) and material involving a range of requirements (e.g. carbon copies, notations etc.) to type accurate copies of various business communications (e.g. business letters, memoranda, business documents, including payroll records and stencils), of normal syllabic intensity (1.35-1.44) at an average speed of 40 w.p.m. for at least ten minutes on a specific task.

Advanced Business Typewriting 1B (TS181) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, typescript, etc.) and material involving a range of requirements (e.g. carbon copies, notations, etc.) to type accurate copies of various business communications (e.g. business letters, memoranda, business documents, including payroll records and stencils), of normal syllabic intensity (1.35-1.44) at an average speed of 40 w.p.m. for at least ten minutes on a specific task.

Advanced Business Typewriting 11A (TS280) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, unarranged material, annotated notes etc.) and material involving a range of requirements (e.g. carbon copies, continuation sheets, etc.) to type accurate copies of various business communications (e.g. business letters, reports, financial statements etc.) of difficult syllabic intensity (over 1.45) at an average speed of 45 w.p.m. for at least ten minutes on a specific task. To plan and make decisions relating to the most suitable typewriting technique likely to be required in a business organisation.

Advanced Business Typewriting 11B (TS281) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, unarranged material, annotated notes etc.) and material involving a range of requirements (e.g. carbon copies, continuation sheets, etc.) to type accurate copies of various business communications (e.g. business letters, reports, financial statements etc.) of difficult syllabic intensity (over 1.45) at an average speed of 50 w.p.m. for at least ten minutes on a specific task.

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 (non-vocational) 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 & 1B (TS215, 216) (1 unit each)
Becoming aware of one's potentialities, interpersonal relationships, conflicts, difficult problem solving. Sociology and psychology, limitations in handling certain situations and problems.

Business Mathematics 1A (TM110) (1 unit)
Coping with situations involving the use of business mathematics, more specifically mathematics applicable to other subjects, acquiring skills to cope with statistical analysis.

Business Mathematics 1B (TM111) (1 unit)
Statistical processes used in business operations, related business and statistical vocabulary, solving business problems using statistical processes, using formulas and interpreting results.

Introduction to Business Data Processing (TS120) (2 units)
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, 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 selection 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.

Data Processing 2 (TS220) (2 units)
Preparation of modern data processing systems, analysis of systems, and implementation of new systems.

Data Processing 9 (TS221) (2 units)
Programming, using COBOL language.

Economics (TS008) Tertiary Orientation 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 inter-relationship between the shop steward and company personnel - employees, etc. Employee and union-oriented rules (award, non-award; written, unwritten). Appreciation of written rules governing employer-manage relationships at work. Function of, and knowledge of, main 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 managers, policy, decision-making and arbitration and commission. 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 in 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 exercises to improve the industrial environment.

Industrial Relations 1A and 1B (TS452) (1 unit)
A study of inter-relationship 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, industrial organisations, primary, secondary and tertiary industry, consumerism, pricing, trade unions/employer organisations, population, the environment, the influence of government on industry and society.

Introduction to Business Service Organisations (TS129)
(Formerly Principles of Organisations) (1 unit)
What is business? What does it do? Forms of ownership, non-profit organisations, internal organisation structure, functions of management, personal skills for 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 Economics 1A (TS230) (1 unit)

Introduction to Economics 1B (TS239) (1 unit)
Four out of the following six topics to be studied. Economic role of government, economic measurement, economic systems, international trade, the finance market and the level of economic activity, the labour market.

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
Middle-management Practice A (Planning) (TS224) (1 unit)
Management as an integrated process, planning — nature of the planning process; activities, forecasting objective, policies and procedures, programs and schedules, budgeting, application.

Middle-management Practice B (Organisation) (TS225) (1 unit)
Department organisation, analysis, designing/re-designing a departmental organisation structure; factors affecting organisation specialisation, values and problems; alternative structures, authority distribution, organisation charting, manpower requirements, planning, job documentation, corporate organisational structure and relationship.

Middle-management Practice C (Staffing) (TS324) (1 unit)
This subject examines the main elements involved in the assessment of present and future manpower needs through: recruitment, selection, training and development appraisal; retirement, remuneration, separation.

Middle-management Practice D (Leadership) (TS325) (1 unit)
This subject enables the student to develop leadership skills, identify the framework within which decision making is practical, communicate effectively and to understand the problems which arise in the communication process. Use committees to solve problems effectively, motivate people within an organisational framework and become aware of various leadership styles and their application.

Marketing Principles 1 (TS227) (1 unit)
The meaning of marketing in our Australian society; marketing philosophies and organisational structure; marketing research; segmentation of markets and consumer behaviour.

Marketing Principles 2 (TS228) (1 unit)
The planning of product, price, place and promotion strategies; development of the strategic plan; marketing decision-making and the social implications.

Middle-level English 1A (TH126) (1 unit)
A general course in basic communication skills for a variety of purposes. The emphasis is upon competence in written and spoken expression, reading and research, and critical evaluation of the language of argument, literature, film and drama.

Middle-level English 1B (TH127) (1 unit)
The consolidation and appreciation of communication skills in business and other organisational contexts: business writing (letters, memos, minutes, reports); speaking and listening (interviews, meetings, dictation); reading, research and critical interpretation of factual material (reports, newspaper and journal articles).

Office Practices 1A (TS117) (1 unit)
The organisational and administrative aspects of office work, supervision of staff, use of specific clerical aids and office machines, development of communication.

Office Practices 1B (TS118) (1 unit)
Processing of documents: effective document design and control; filing systems and office layout.

Personnel 1A (TS130) (1 unit)
Recruitment, selection and employment — responsibility of various parties, correct sequence of events in filling a vacancy, techniques and procedures involved.

Personnel 1B (TS131) (1 unit)
Understanding, interpreting and administering the active component of manual worker awards. Identifying and handling non-award matters related to wages. Application of site and other agreements to wage administration, especially where such agreements may interact with or supersede awards. Knowledge of approaches to wage-setting — fixed single rates, experience gradings, merit payment etc. Piece rate programs. Development and maintenance of salary system, white collar employees — award, non-award. How to determine up-to-date salary market information. Application of Labour and Industry Act to non-award situations. Fringe benefits — advantages and disadvantages. Application of EDP to salary and wage systems.

Personnel 2A (TS230) (1 unit)
Safety and employee services — safety programs, health hazards and corrective action welfare, range and evaluation of employee services.

Personnel 2B (TS231) (1 unit)
This unit has been re-named 'Industrial Relations C'. See details under that title.

Personnel 3A (TS233) (Previously Personnel 2D) (1 unit)
The personnel function — historical development of personnel, understanding of personnel function of administrative practices; need for personnel specialist.

Production Techniques 1A (TS150) (1 unit)
Introduces manufacturing industries and sub-systems. Types of production organisations. Processes and controls applied in quantitative and graphical form enabling the conversion of market requirements into saleable inventory.

Production Techniques 1B (TS151) (1 unit)
Advance in detail on 1A. Examining in detail manufacturing planning, various scheduling and estimating techniques including effects of change.

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)
Examine the practice methods of project management through the use of network planning, efficiency controls and problem solving techniques.

Sales Management 1 (TS260)
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)
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 1 (TS160) (1 unit)
Salesmanship: the role of the salesman; knowledge required to sell; an understanding of buying influences; selling and merchandising techniques; little bias and sales planning.

Salesmanship 2 (TS161) (1 unit)
Salesmanship: how to plan and conduct a sales presentation; opening the sale; use of sales dilds; selling the benefits; overcoming objections; closing the sale and after sales service.

Secretarial Practice A and B (TS165) and (TS166)
Understanding role of secretaries as an integral part of management, apply secretarial procedures, promote good human relations, skills of shorthand and typing, basis for more advanced studies.

Secretarial Projects A (TS265) (2 units)
To enable students to receive an integrated course of training so that they can complete the duties of a secretary to intermediate level of management in regard to stenography, typing and general secretarial practice. To receive sufficient shorthand and typewriting practice to achieve a speed of 120 w.p.m. shorthand and 50 w.p.m. typing.

Secretarial Projects B (TS266) (2 units)
To enable students to receive an integrated course of training so that they can complete the non-stenographic duties and responsibilities of a secretary to intermediate level of management, this subject is concerned mainly with secretarial office tasks and assignments. To have sufficient typewriting practice to achieve a speed of 50 w.p.m. in typewriting.

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.

Supply Procedures 1A (TS170) (1 unit)
Topics covered include: the supply organisation-on 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 method.

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)
(Previously Personnel 2C)
Organisational planning, management by objectives, relationship of stores and warehouse planning, personnel, procedures and handling, human resources, prediction of future manpower requirements, manpower planning to packaging.

Training Manpower Planning
(Previous Work Study 2B (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 behavioural 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 work practice for training records and procedures. The design of 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)
(Previous 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 element 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 relocation, 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) (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 other activities. The distinction 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.
Kew High Evening School Department

Head
Mr J. Berry, BSc, DipEd

Classes offered by Kew High School, come under the administrative control of Swinburne Technical College.

A wide range of HSC (year 12), year 11 and general interest subjects are available.

Subjects available

HSC — Group 1
English (day and evening)  English Literature
Australian History (day and evening)  Pure Mathematics
Eighteenth Century History  General Mathematics
Accounting  Biology
Art  Chemistry
Legal Studies  Physics
Economics  Human Development
Politics  and Society

HSC — Group 2
English A  Media Studies
Small Business Management  Outdoor Education

Year 11
English  Accounting and Business Studies
Mathematics I  Mathematics II
Computer Studies  Chemistry

Basic
English  Shorthand Theory
Mathematics (Year 10)  Typing

Short courses
Yoga and Relaxation  Basic car care

Further information
Additional details about evening classes are available from:
Mr J. Berry
Principal, Kew High Evening School
Burke Road, East Kew 3102
Telephone: 859 8063
Staff ........................................ TC42
Electrical and electronics courses ........ TC43
Subject details ................................ TC49
Machines and materials courses .......... TC52
Special courses ............................ TC61
Subject details .............................. TC61
Engineering Division

Head
M.M. Katz, BEng(Mech), BEd, DipMechEng, CertElecEng
TTIC, ARMIT, MIEAust, MAIRAH

Electrical and Electronics Department

Head
F.L. Smyth, TTIC, TechCert(Electronics), SEC A Grade Licence

Academic staff
J.L. Alarcon, BE(ElecComm), BE(Electronics), GradDipDigital Electronics, DipEd, GradIEAust
M.M. Blonder, DipEng(Electronics), DipEd
A.G. Hampton, TTIC, TechCert(Electronics)
M. Cadilhac, COT(Electronics)
R.M. Edwards, TTIC, SEC A Grade Licence
TechCert(Electronics)
B.T. Flanagan, DipTT, TechCert(Electronics), SEC A Grade Licence
F.A. Gaunt, TTIC, SEC A Grade Licence
TechCert(Electronics)
W.J. Gear, BE(Electrical)
A. Hackett, BE(Elec), DipEd
P. Hince, SEC A Grade Licence
H. Hoenen, HigherTechCert(Power), DipTT
TechCert(Electronics), SEC A Grade Licence
F. Hutchinson, TTIC, TechCert(Electronics), SEC A Grade Licence
B. Johnston, Cert TT, SEC A Grade Licence
D. Kottek, BE(Elec), DipEd, MIEAust, MACS
D.V. McMahon, TTIC, SEC A Grade Licence
W.H. Pratt, TTIC, SEC A Grade Licence
TechCert(Electronics)
G.H. Sutherland, DipEE, DipEd
R.G. Warren, TTIC, TechCert(Electronics)

Machines and Materials Department

Head
G.N. Williams, TTIC

Academic Staff
D. Amato, BEng(Mech), DipEd, GradIEAust
K. Battersby, TTIC
M. Baurn, TTIC
P. Bentley, DipProdEng, DipEd
K.J. Carmody, DipMechE, DipEd, MIEAust
M. Carvill, techCert(MechDesign), TTIC
L. Dodds
G. Dzioba, TTIC
A.O. Edgell, REng, MIPLANTE, LIPRODE, CEI
J.M. Franklin, TTIC
D.J. Gaylard, TTIC
W. Houliston, TTIC
L.J. McLaughlan, TechCert, TTIC, DipTT
F.S. McLucas, TTIC
E.G. Oliver, TTIC
K. O’Neill, DipTT, TTIC
H. Ramaekers
F. Sanstrom, TTIC
S.D. Scott-Branagan, TTIC
R.S. Somerville, TTIC
A.J. Stapley, PhD, DipEd
P. Toma, Cert(Toolmaking), CertPressToolmaking, DipTT
TTIC
Electrical and Electronic courses

The following courses are offered by the Electrical and Electronics Department:

**Apprenticeship course (Electrical Mechanics)**

A part-time day 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 Department of Technical and Further Education (TAFE).

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 of Victoria for issue of the relevant ‘B’ Grade or ‘A’ Grade licence.

Note: only persons licensed by the State Electricity Commission of Victoria may carry out electrical wiring work.

**Electrical technician courses:**

- **83510E** Technician — Electrical (Electronics)
- **83511E** Technician — Electrical (Drafting)
- **83512E** Technician — Electrical (Power)
- **83513E** Technician — Electrical (Motor Control)

The electrical technician courses provide valuable training in specialised fields for apprentices and tradesmen 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.

Tradesmen who undertake a technician course will be required to attend classes on two evenings per week unless exemptions are granted for relevant subjects at year 11 level.

**83570E Industrial Electronics Certificate course**

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 tradesman can qualify for an electrical technician certificate by completing the outstanding subjects as listed under the electrical technician courses.

**Post-trade course**

**83571E** Electrical Contracting, Estimating and Supervision

**Career potential**

Qualified electrical mechanics are employed by electrical contracting firms for the purpose of estimating the cost of an electrical installation.

There is a demand for electrical estimators employed by major electrical contracting firms. Many self-employed ‘A’ Grade Electrical Contractors find it necessary to do this course.

**Entrance prerequisites**

The prerequisite for enrolment is that the person is an electrical mechanic or an electrical apprentice.

**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 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:

- **83520G** Certificate of Technology (Electrical)
- **83530G** Certificate of Technology (Electronic),
- **83531G** Certificate of Technology (Electronics)
- **83540G** Cooperative Certificate of Technology (Electrical and 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 paid work experience is arranged by Swinburne and undertaken in two semesters, each of six months, 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.

Students who undertake cooperative education courses derive many benefits. Some of these are as follows:

(a) research shows that a student’s academic performance is improved following work experience.

(b) students receive recognised rates of pay for their twelve months’ work experience.

(c) students can sample particular areas of their chosen branch of engineering before graduation.

(d) students work on real engineering problems in industry.

**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 Drafting course (not essential), or approved equivalents — refer to head of the department.

**Exemptions**

Should be referred to the head of the department with suitable written evidence to support the claim.

**Enquiries**

Mr F.L. Smyth, 819 8493.
### Apprenticeship course

**83501D** Apprenticeship: Electrical Mechanics

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
</tr>
<tr>
<td>TE001</td>
<td>Module 1 Electrical Wiring</td>
</tr>
<tr>
<td>TE002</td>
<td>Module 2 Electrical Wiring</td>
</tr>
<tr>
<td>TE003</td>
<td>Module 3 Electrical Wiring</td>
</tr>
<tr>
<td>TE004</td>
<td>Module 4 Electrical Wiring</td>
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<tr>
<td>TE005</td>
<td>Module 5 Electrical Wiring</td>
</tr>
<tr>
<td>TE006</td>
<td>Module 6 Electrical Wiring</td>
</tr>
<tr>
<td>TE007</td>
<td>Module 7 Electrical Fitting</td>
</tr>
<tr>
<td>TE008</td>
<td>Module 8 Electrical Fitting</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE100</td>
<td>Module 9 Electrical Wiring</td>
</tr>
<tr>
<td>TE101</td>
<td>Module 10 Electrical Wiring</td>
</tr>
<tr>
<td>TE102</td>
<td>Module 11 Electrical Wiring</td>
</tr>
<tr>
<td>TE103</td>
<td>Module 12 Electrical Wiring</td>
</tr>
<tr>
<td>TE104</td>
<td>Module 13 Electrical Wiring</td>
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<tr>
<td>TE105</td>
<td>Module 14 Electrical Wiring</td>
</tr>
<tr>
<td>TE106</td>
<td>Module 15 Electrical Fitting</td>
</tr>
<tr>
<td>TE107</td>
<td>Module 16 Electrical Fitting</td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE200</td>
<td>Module C51 Electrical Wiring</td>
</tr>
<tr>
<td>TE201</td>
<td>Module C52 Electrical Wiring</td>
</tr>
<tr>
<td>TE202</td>
<td>Module C53 Electrical Wiring</td>
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<tr>
<td>TE203</td>
<td>Module C54 Electrical Wiring</td>
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<td>TE204</td>
<td>Module C55 Electrical Wiring</td>
</tr>
<tr>
<td>TE205</td>
<td>Module C56 Electrical Wiring</td>
</tr>
<tr>
<td>TE206</td>
<td>Module C57 Electrical Wiring</td>
</tr>
<tr>
<td>TE207</td>
<td>Module C58 Electrical Wiring</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Subject examined</th>
<th>Required modules</th>
<th>Equiv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE301</td>
<td>Elec. Wiring Theory 3</td>
<td>C54</td>
</tr>
<tr>
<td>TE302</td>
<td>Elec. Wiring Prac. 2 and 3</td>
<td>C54</td>
</tr>
<tr>
<td>TE401</td>
<td>Elec. Wiring Theory 4</td>
<td>C58</td>
</tr>
<tr>
<td>TE402</td>
<td>Elec. Wiring Prac. 4</td>
<td>C58</td>
</tr>
</tbody>
</table>

### Technician Certificate courses

**Electrical technician**

**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 Leaving technical level. Minimum entry is completion of relevant year 10 subjects.

**Core subjects**
The 24 basic vocational modules of an electrical apprenticeship course are compulsory subjects in all electrical technician courses in addition to those subjects listed here under specialist streams.

**Minimum units**
The minimum 46 units comprising a complete technician course are:
- 24 Basic Vocational modules (Trade),
- 12 General Studies units,
- 4 Base Studies units,
- 6 Specialist Studies units.

**83510E** Technician — Electrical (Electronics)

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics 1T</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
</tr>
<tr>
<td>TH140</td>
<td>English 1T</td>
</tr>
<tr>
<td>TE170</td>
<td>Electronic Fundamentals</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TM270</td>
<td>Science 2T</td>
</tr>
<tr>
<td>TH240</td>
<td>English 2T</td>
</tr>
<tr>
<td>TE326</td>
<td>Industrial Electronics 11</td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE412</td>
<td>Industrial Electronics 2T (General)</td>
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<tr>
<td><strong>4th year</strong></td>
<td></td>
</tr>
<tr>
<td>TE413</td>
<td>Industrial Electronics 3T (Digital)</td>
</tr>
<tr>
<td>TE415</td>
<td>Industrial Electronics 3T (Digital)</td>
</tr>
<tr>
<td>TE414</td>
<td>Computing and Logic Circuits</td>
</tr>
</tbody>
</table>

**83511E** Technician — Electrical (Drafting)

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
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</thead>
<tbody>
<tr>
<td><strong>1st year</strong></td>
<td></td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics 11</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 1T</td>
</tr>
<tr>
<td>TH140</td>
<td>English 1T</td>
</tr>
<tr>
<td>TE170</td>
<td>Electronic Fundamentals</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE227</td>
<td>Electrical Drafting 1T</td>
</tr>
<tr>
<td>TM230</td>
<td>Mathematics 2T</td>
</tr>
<tr>
<td>TM170</td>
<td>Science 2T</td>
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<tr>
<td>TH240</td>
<td>English 2T</td>
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<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE324</td>
<td>Electrical Apparatus and Circuits</td>
</tr>
<tr>
<td>TE325</td>
<td>Electrical Drafting 2T</td>
</tr>
<tr>
<td><strong>4th year</strong></td>
<td></td>
</tr>
<tr>
<td>TE326</td>
<td>Industrial Electronics 1T</td>
</tr>
<tr>
<td>TE425</td>
<td>Electrical Drafting 3T</td>
</tr>
</tbody>
</table>
### 83512E Technician — Electrical (Power)

<table>
<thead>
<tr>
<th>Hours</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd and 4th year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TM130 Mathematics 1T</td>
<td>TE277 Electrical Drafting 1T</td>
<td>TM230 Mathematics 2T</td>
</tr>
<tr>
<td></td>
<td>TM170 Science 1T</td>
<td>TM270 Science 2T</td>
<td>TM230 Mathematics 2T</td>
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<td>TH140 English 1T</td>
<td>TH140 English 1T</td>
<td>TE150 Electric Motor Control 1T</td>
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### 83513E Technician — Electrical (Motor Control)

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<td>TM130 Mathematics 1T</td>
<td>TM230 Mathematics 2T</td>
<td>TE250 Electrical Motor Control</td>
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<td>TM170 Science 1T</td>
<td>TM270 Science 2T</td>
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<td>TE170 Electronic Fundamentals</td>
<td>TE150 Electric Motor Control 1T</td>
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### 83571E Electrical Contracting, Estimating and Supervision

#### Course structure
The topics covered in this one year, four hours per week course, are as follows:
- Costing procedures
- Pricing
- Specifications
- Labour correction factors
- Time study
- Progress reports
- Time sheets
- Pricing of domestic, commercial and industrial jobs
- Supervision procedures

#### Course details
- **Hours**: 2
- **Course**: Electrical Contracting, Estimating and Supervision (electrical)

### Certificate of Technology courses

#### 83520G Certificate of Technology (Electrical)

#### Course structure
- 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: maximum of 4 units

#### Compulsory core subjects (17 units)
- **Unit value**
- TE110 Applied Electricity 1H
- TE123 Electronics 1H
- TH115 Electrical Drafting 1H
- TH116 Communication 1A, 1B
- TM123 Mathematics 1E

#### Level B
- TE210 Applied Electricity 2H
- TE223 Electronics 2H
- TM223 Mathematics 2E

#### Level C
- TE310 Electrical Machines 1H

#### Microprocessor fundamentals
Students who have successfully completed TE415 (Digital), are eligible to enrol in TE414 Computing and Logic Circuits 2T (covering microprocessor fundamentals and applications).
Specialist elective subjects

Level A
TF121 Applied Mechanics 1A and 1B 2

Level B
TE333 Electrical Drafting 2H 2
TE336 Digital Electronics 1H 2
TF221 Applied Mechanics 2A and 2B 2

Level C
TE323 Electronics 3H 2
TE360 Electrical Design 1H 2
TE320 Pulse and Digital Electronics 1H 2
TE338 Microprocessor Fundamentals 2
TE436 Digital Electronics 2H 2

Level D
TE410 Power Systems 2
TE460 Electrical Design 2H 2
TE428 Microprocessor Applications 2
TE419 Electrical Measurements 2

General elective subjects

Level A
TE125 Wiring and Assembly Methods 1H 2
TE235 Computer Studies 1H 2
TM160 Physics 1H 2
TH180 Social Science 1H 1

If a student is particularly interested in obtaining employment in the electrical drafting and design area, there are elective subjects which should be undertaken, i.e. Electrical Design 2, Electrical Drafting 2H.

83530G Certificate of Technology — Electronics

Course structure
Consists of a minimum of 30 units as detailed below, together with a total equivalent of two years of relevant industrial experience.

Course structure
Compulsory core subjects 15 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: maximum of 4 units.

Compulsory core subjects (15 units)

Level A
TE119 Circuit Theory 1H 2
TE123 Electronics 1H 1
TH115 Communication 1A, 1B 2
TM123 Mathematics 1E 2

Level B
TE219 Circuit Theory 2H 2
TE223 Electronics 2H 2
TM223 Mathematics 2E 2

Level C
TE323 Electronics 3H 2

Specialist elective subjects

Level A
TE125 Wiring and Assembly Methods 1H 2
TE141 Electronic Drafting Principles 2
TE126 Electronic Circuits 1H 2

Level B
TE225 Wiring and Assembly Methods 2H 2
TE236 Digital Electronics 1H 2

83540G Cooperative Certificate of Technology — Electrical or 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 year full-time study

6 months' work experience

6 months' full-time study

6 months' work experience

6 months' full-time study

1 years' work experience

Certificate awarded

Swinburne Cooperative course
Swinburne Technical College
Certificate of Technology courses – Electrical

LEVEL D
4 Units of Specialist Electives

LEVEL C
Core Unit
of 4 Units of Specialist Electives

LEVEL B
Not more than 4 Units of General Electives

LEVEL A
Social Science 1H (1)
Computer Studies 1H (1)
Physics 1H (2)
Wiring and Assembly Methods I (9)
Mathematics 1E (2)
Electronics 1H (1)
Comms. and Report Writing (7)
Applied Electricity 1H (2)

Wiring and Assembly Methods II (2)
Mathematics 2E (2)
Electronics 2H (2)
Digital Electronics 1H (2)
Applied Electricity 2H (2)
Applied Mechanics 1A & 1B (2)

Electrical Design 2H (2)
Electrical Machines 3H (2)
Electrical Drafting 1H (2)
Microprocessor Applications (2)
Pulse & Logic Electronics (1)

Individual subjects have particular prerequisites

Notes:
* C.O.T. also awarded if Microprocessor and Power stream completed.
+ Subject to student numbers.

□ Core subject.
=G General elective

Subject to student numbers.

Unit value.
Electrical and Electronics

subject details

Applied Electricity 1H (TE110)
This course provides the fundamentals for subsequent studies in the certificate courses 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.

Applied Mechanics 1A and 1B (TF121)

Applied Mechanics 2A and 2B (TF221)

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, electrostatics, 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 1A, 1B (TH115, TH116)
The examination of methods of collecting, organising, evaluating and presenting factual information. Oral presentation, report writing, letters, minutes and media analysis.

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 Techniques (TE421)
Communication system, RF voltage amplifiers, RF oscillators, RF power amps, modulation, demodulation, superheterodyne receivers, transmission lines, antennas.

Computer Studies 1H (TE235)
To enable the student to become competent in writing simple PASCAL programs. To solve problems in the electrical/electronic areas, and know how to use resident complex programs in the computer's library.

Digital Electronics 1H (TE236)
This subject has a theoretical and a practical base. The subject embraces topics such as logical characteristics of waveforms, truth tables, Boolean algebra, Karnaugh maps, number systems and codes, logic families such as TTL and CMOS, MSI devices such as flip flops, shift registers, counters, adders etc, memory devices such as RAMS, visual display devices such as 7 segment LEDs, cold cathode display devices, hexadecimal displays etc.

Digital Electronics 2H (TE436)
Digital electronics is a subject that has a theoretical and 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, Schottky TTL etc. Digital systems such as UARTS, USARTS, keyboard encoders etc.

Electrical Apparatus and Circuits (TE234)
Electrical components, DC and AC motor starters, automatic starters, speed control of motors, rectification, alarm systems, generating systems.

Electrical Contracting and Estimating (TE301)

Electrical Design 1 (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 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 Machines 1H (TE310)
Topics include machine operational principles, rotating machines, windings currents and EMFs, transformers, three-phase induction machines, starting, speed control, braking, single phase motors, synchronous machines.

Electric Motor Control 1T (TE150)

Electric Motor Control 2T (TE230)

A more detailed syllabus is available on request.

Electrical Mechanics

Apprenticeship modules

First year Modules 1 to 8

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.

Module 6 (TE006)
Electro-magnetic induction, Faraday's law, Lenz's law, mutual induction, inductive reactance, induced EMF, generation of an EMF, simple alternating current, 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 line, cutting fields, lathe operations, screw threads, soft soldering, hard soldering.

Second year Modules 9 to 16

Module 9 (TE009)
Moving coil instruments, voltmeter, ammeter, shunts and multipliers, wattmeter, multimeter, 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, 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.

Third year Semester 1

Modules 17 to 20 (known as C51 to C54)

Module C51 (TE17)
AC theory, RL and C in AC circuit, Impedance, single-phase power, power factor, power factor correction.

Module C52 (TE18)
Series RL and C, parallel RL and C, design, electrical installations, tariffs, switchboards, earthing, testing, licensing.

Module C53 (TE19)
Transformers, auto-transformers, cooling, Instrument transformers, voltage bucking and boosting.

Module C54 (TE20)
Single phase motors, series universal, split phase, shadrd pole motors, repulsion and repulsion-induction motors.

Third year Semester 2

Modules 21 to 24 (known as C55 to C58)

Module C55 (TE21)
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 (TE22)
Three-phase transformers, loading, interconnections, volt drops in a three-phase circuit, calculation of maximum demand in a three-phase installation.

Module C57 (TE23)
Polyphase motors, slip speed, three-phase motor starters, synchronous motors protective devices, calculations of operating conditions.

Module C58 (TE24)
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.

Electrical Mechanic Qualifications

External examinations (SEC Licensing)

Electrical Wiring Theory 3 (TE301)
Equivalent SEC 'B' Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE020.

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.

Electrical Wiring Theory 4 (TE401)
Equivalent SEC 'A' Grade theory. This subject covers the theoretical content of electrical mechanics modules TE001 to TE024.

Electrical Wiring Practical 4 (TE402)
Equivalent SEC 'A' Grade practice. This subject covers the practical content of electrical mechanics modules TE001 to TE024.

Electronic Fundamentals (TE170)
Safety principles, revision of electronic calculations, materials, registers, multimeters, AC and DC power, capacitors, inductors, transformers, semi-conductor principles, semi-conductor diodes, rectification and power supplies, multi-meters, cathode ray oscilloscope.

Electronics 1H (TE123)
A course designed to present an overview of modern electronics practice with emphasis on developing proficiency in measuring techniques and the basic understanding and limitations of test equipment.

Electronics 2H (TE223)
Introductory course dealing with the following topics — diode and zener diode applications, biasing and mid-frequency analysis of bipolar transistor amplifiers, field effect transistor amplifiers and vacuum tube amplifiers.

Electronics 3H (TE323)
Classification of amplifiers, feedback amplifiers, operational amplifiers, direct coupled amplifiers, differential amplifiers, frequency response of amplifiers, active filters, power amplifiers, harmonic distortion analysis in amplifiers, power and heat dissipation in amplifiers, Rectification and power supply specifications.

English 1T (TH140)
Development of ability to read with comprehension and appreciation Practice in oral and written English. Preparation of clear, concise notes and summaries.

English 2T (TH240)

Industrial Electronics 1T (TE126)

Industrial Electronics 2T (TE412)

Industrial Electronics 3T (general) (TE143)
Industrial Electronics 3T (digital) (TE415)

Mathematics 1T (TM130)
Two hours per week during the 2nd semester, full year. Prerequisites: Year 10 mathematics or equivalent and adult entry. Assessment: Periodic tests and assignments and a final three-hour exam—nation 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.


Students enrolled in TM130 usually study Science 1T (TM170) also; these two subjects are time-tabled in a four-hour block.

Mathematics 2T (TM230)
Two hours per week, evening over two semesters. Prerequisites: Mathematics—cs1T, adult entry, or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: class work (forty per cent) and one final exam—nation(sixty per cent).

An extension of Mathematics—cs1T, 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.

References
Supplied notes; students enrolled in TM130 usually study Science 2T (TM270) concurrently, the two subjects being time-tabled in a four-hour block.

Mathematics 1E (TM123)
Full-time. Five hour per week (day) over one semester. Part-time. Two hours per week (day) over two semesters. Prerequisites: Completion of year 11. Assessment consists of two parts
1. Topic tests, one on each topic contributing to thirty per cent of the final mark.
2. One three-hour examination held in mid-June (or in November) contributing to seventy per cent of the final mark.

Mathematics 1E is a core subject for a number of certificates offered. Topics covered are: numbers and the number line, equations and formulae, relations and functions, trigonometry and applications, number systems, complex numbers, Boolean algebra.

References
Supplied notes.

A scientific calculator is also required.

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 Mathematics/Science head of department. Assessment: Classwork (thirty per cent) and one final examination (seventy per cent).

An extension of Mathematics—cs1E (TM123) the topics include: complex numbers, limits, differentiation and applications, integration and applications, differential equations, Boolean algebra.

References
Supplied notes.


Mathematics 3H (TM120)
Three hours per week day or evening over two semesters. Prerequisites: Mathematics 2E or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: Computer assignments (twenty per cent), class work in Applied Mathematics (thirty per cent), and one final exam—nation(fifty per cent).

The final stage II mathematics for the COT (Electronics) subject consists of: review of complex numbers, hyperbolic functions, review of differentiation, partial differentiation and applications, review and extension of integration with applications, differential equations, sequences and series, Fourier analysis, Laplace transforms, computer programming, extension of Boolean algebra.

References are supplied notes.


Microprocessor Applications (TE438)
This subject develops a good understanding in the application of microprocessors and interfacing. The course consists of:
(a) the design and implementation of an interfacing problem.
(b) A project related to the interest of the student, or some area of the student's work.

Microprocessor Fundamentals (TE338)
The aim of the course is to provide a wide knowledge of microprocessors available in the market today. The areas 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.

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/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.

Pulse and Digital Electronics 1A (TE337)
This subject gives a broad knowledge in the pulse techniques used in the interface of electronics 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 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 + Science 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: Mathematics 2T, adult entry, or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: Classwork (forty per cent) and one final exam—nation(sixty per cent).

An extension of Science IT, the topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, rotational kinematics, normal dynamics.

References
Supplied notes.

Students enrolled in TM270 usually study Mathematics (TM320) concurrently, the two subjects being time-tabled in a four-hour block.

Social Science 1H (TM110)
This subject aims at Improving social awareness and cultivating interpersonal relationships. Experience is provided with analysing and solving problems in this area, (developing facility and willingness to cope with social change. Learning through group experience, dialogue, lectures and case studies).

Supervision (Electrical) (TE506)
Wiring and Assembly Methods 1H (TE125)
This is an introduction to the basic construction practices and manufacturing techniques used in electrical/electronics areas. The subject involves construction of a battery charger/power supply unit.

Wiring and Assembly Methods 2H (TE225)
An extension of TE125. The emphasis is placed on following areas:
(a) Fault finding in electronic equipment
(b) Soldering practice
(c) Printed circuit board construction of design
(d) General construction techniques (projects)
(e) Prototype construction and debugging

Machines and Materials courses
The following courses are offered by the Machines and Materials Department.

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
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 tradesmen 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. Tradesmen 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 and Further Certificate of Technology courses
Certificate of Technology
Mechanical
Courses are based on a core of basic mechanical subjects and a wide range of elective subjects, which provide for the diverse needs of aides to professional mechanical engineers.

Production
Three streams are available in the field of production engineering. Tooling design, manufacturing and work study, are areas covered in these streams.

Design Drafting
Production, mechanical.
Students who are employed or seeking employment in drawing offices and possess the necessary qualifications may enter these courses.

Further Certificate of Technology — 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, tradesmen’s assistants and others with the opportunity to complement their own areas of occupation.

It also provides younger students seeking apprenticeships, 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 tradesmen. 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 Education Department of Victoria to give instruction in all branches of electric arc welding.

An education department certificate is granted to students who pass the final examination in grade three with fifty per cent in both theory and practice. A certificate from the Department of Labour and Industry (Boiler Inspection 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 DLI standards. The welding section of this department is an approved school of instruction in welding of all phases for the purpose of the Boiler Code SAA C[t] Part V.

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
Head Mr G. Williams, 819 8504

Apprenticeship courses

83601D  Apprenticeship, Fitting and Machining

Career potential
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 detail

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<td>Construction Equipment</td>
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</tr>
</tbody>
</table>

Apprenticeship courses

83601D  Apprenticeship, Fitting and Machining

Career potential
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 detail

<table>
<thead>
<tr>
<th>Module</th>
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<tr>
<td>Construction Equipment</td>
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</table>
83603D  Boilermaking and Structural Steel Fabrication

General
This is an apprenticeship course. The first and second years only are conducted at Swinburne Technical College at present. Attendance is either one full day or two full days per week (8am-5pm).

Course structure
The subjects taken are Theory, Drawing and Practice.
Each year of study consists of eight modules, which are made up of the three subjects.

<table>
<thead>
<tr>
<th>Course detail</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TF601 Module 1 — Theory and Practice</td>
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<td>TF602 Module 2 — Theory and Practice</td>
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<td>TF603 Module 3 — Theory and Practice</td>
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<td>TF604 Module 4 — Theory and Practice</td>
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<td>TF605 Module 5 — Theory and Practice</td>
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<td>TF606 Module 6 — Theory and Practice</td>
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<td>TF607 Module 7 — Related Instruction</td>
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<td>TF608 Module 8 — Related Instruction</td>
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<tr>
<td>TF609 Module 9 — Theory and Practice</td>
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<td>TF610 Module 10 — Theory and Practice</td>
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<tr>
<td>TF611 Module 11 — Related Instruction</td>
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<tr>
<td>TF612 Module 12 — Theory and Practice</td>
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<td>TF613 Module 13 — Theory and Practice</td>
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<td>TF614 Module 14 — Theory and Practice</td>
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<td>TF615 Module 15 — Related Instruction</td>
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<td>TF616 Module 16 — Related Instruction</td>
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<td>TF617 Module 17 — Related Instruction</td>
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<td>TF618 Module 18 — Related Instruction</td>
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<td>TF619 Module 19 — Theory and Practice</td>
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<td>TF620 Module 20 — Theory and Practice</td>
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<tr>
<td>TF621 Module C21 — General Fabrication</td>
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<tr>
<td>TF622 Module C22 — General Fabrication</td>
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<tr>
<td>TF623 Module C23 — General Fabrication</td>
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<tr>
<td>TF624 Module C24 — General Fabrication</td>
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</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 Leaving technical 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 tradesmen may undertake advanced trade training in order to equip themselves for positions such as detail draftsmen, 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 tradesman;
(b) have approved prerequisite qualifications.
Minimum entry level 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.

Mechanical Technicians
Course structure for students with approved year 10 English, Mathematics, Science.
(i) Eight (8) basic units as below.
(ii) Specialist practices as shown under specific courses.

<table>
<thead>
<tr>
<th>Basic units</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM140 English 1T</td>
<td>2</td>
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<tr>
<td>TM130 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF126 Technician Drawing T</td>
<td>2</td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TF227 Metallurgy 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

Specific courses

83610E  Technician — Mechanical
(Refrigeration and Air-conditioning)

(i) Eight (8) basic units as above.
(ii) Specialist practices as shown below.

<table>
<thead>
<tr>
<th>Basic units</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP257 Process Heating</td>
<td>2</td>
</tr>
<tr>
<td>TF338 Instrumentation</td>
<td>2</td>
</tr>
<tr>
<td>TP348 Air-conditioning 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP449 Refrigeration 1T</td>
<td>2</td>
</tr>
<tr>
<td>TP446 Air-conditioning 2T</td>
<td>2</td>
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<tr>
<td>TP449 Refrigeration 2T</td>
<td>2</td>
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</tbody>
</table>

TCS4
83611E Technician — Mechanical (Fluid Power)

(i) Eight (8) basic units as above.
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF110</td>
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</tr>
<tr>
<td>TF319</td>
<td></td>
</tr>
<tr>
<td>TF479</td>
<td></td>
</tr>
</tbody>
</table>

Specialist practices

| TF319 | Fluid Power 1T | 2 |
| TF479 | Fluid Power 2T | 2 |

One (1) approved elective

| TF319 | Instrumentation | 2 |
| TF319 | Mechanical 1T   | 6 |

83612E Technician — Mechanical (Thermal Plant)

(i) Eight (8) basic units as above.
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319</td>
<td></td>
</tr>
<tr>
<td>TF419</td>
<td></td>
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</tbody>
</table>

| TF319 | Mechanics 1T | 2 |
| TF419 | Mechanics 2T | 2 |

Specialist practices

| TF319 | Applied Heat 1T | 2 |
| TF419 | Applied Heat 2T | 2 |
| TF339 | Instrumentation | 6 |

83613E Technician — Mechanical (Drafting)

(i) Eight (8) basic units as above.
(ii) Specialist practices and related studies as below.

<table>
<thead>
<tr>
<th>Related studies</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319</td>
<td></td>
</tr>
<tr>
<td>TF308</td>
<td></td>
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</tbody>
</table>

| TF319 | Mechanical 1T | 2 |
| TF308 | Engineering Practices 1T | 2 |

Specialist practices

| TF319 | Drafting Practice 1T | 3 |
| TF456 | Drafting Practice 2T | 4 |

One (1) approved elective

| TF319 | Fluid Power 1T | 2 |
| TF319 | Instrumentation | 2 |
| TF319 | Applied Heat 1T | 2 |

83618E Production Technician Certificate

Course structure for students with approved year 10 English, Mathematics, Science.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TM128</td>
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<tr>
<td>TF116</td>
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<tr>
<td>TH110</td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TF119</td>
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<tr>
<td>TH210</td>
<td>2</td>
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<tr>
<td>TF126</td>
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<table>
<thead>
<tr>
<th>Year 3</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TF319</td>
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<tr>
<td>TF318</td>
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<tr>
<td>TF417</td>
<td>2</td>
</tr>
<tr>
<td>TS431</td>
<td>2</td>
</tr>
</tbody>
</table>
Certificate of Technology courses

83620G 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 so as 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.

General studies
(Minimum of six units including units of communication and report writing.)

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TH115 Communication 1A</td>
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<tr>
<td>TH116 Communication 1B</td>
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<td>TM220 Mathematics 2A and 2B (2H)</td>
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<tr>
<td>TH160 Physics 1A and 1B (1H)</td>
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<tr>
<td>TS121 Behavioural Studies 1A</td>
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<td>TS122 Behavioural Studies 1B</td>
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<td>TM220 Mathematics 2A and 2B (2H)</td>
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Related background studies
(Maximum of eight units including not more than six basic units)

<table>
<thead>
<tr>
<th>Basic</th>
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<tr>
<td>TF110 Applied Electricity 1H</td>
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<td>TF119 Circuit Theory 1H</td>
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<tr>
<td>TF133 Electrical Drafting 1H</td>
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<td>TF353 Computer Techniques 1A and 1B</td>
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<td>TF370 Tooling and Inspection Methods</td>
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<td>TF101 Work Study 1</td>
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<td>TF102 Work Study 2</td>
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<td>TF318 Metrology 1A and 1B (1T)</td>
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<td>TF336 Instrumentation 1A and 2A</td>
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<tr>
<td>TE131 Electrical Drafting 1A/1B</td>
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<tr>
<td>TE123 Properties of Electrical Materials 1A and 1B</td>
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<td>TB195 Structural Drafting 1A and 1B</td>
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<td>TB196 Structural Mechanics 1A and 1B</td>
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<tr>
<td>TB196 Structural Practices 1A and 1B</td>
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<td>TB408 Foundations 1A and 1B</td>
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<td>TF103 Work Study 3</td>
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<td>TF104 Work Study 4</td>
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<tr>
<td>TE219 Circuit Theory 2H</td>
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<td>TE260 Electrical Drafting 2H</td>
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<td>TF120 Metrology 2A and 2B (2T)</td>
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<td>TB295 Structural Drafting 2A and 2B</td>
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<td>TB298 Structural Practices 2A and 2B</td>
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<td>TF620 Jig and Tool Drafting 2A and 2B</td>
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<td>TF121 Applied Mechanics 1A and 1B</td>
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<tr>
<td>TF322 Applied Heat 1A and 1B</td>
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<tr>
<td>TF230 Materials and Processes 1A</td>
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<td>TF306 Engineering Practices 1A and 1B</td>
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<td>TF378 Fluid Power 1A and 1B</td>
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<td>TF258 Mechanical Drafting 2A and 2B</td>
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<td>TF231 Applied Mechanics 2A and 2B</td>
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<td>TF328 Applied Mechanics 3A and 3B</td>
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<td>TF422 Applied Heat 2A and 2B</td>
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<td>TF330 Materials and Processes 2A</td>
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<td>TF478 Fluid Power 2A and 2B</td>
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Specialist practices
(As required)

<table>
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<th>Unit value</th>
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<tr>
<td>TF458 Mechanical Design 1A and 1B</td>
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<tr>
<td>TF416 Machines and Mechanisms 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF479 Mechanics of Fluids and Fluid Machinery 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TF448 Refrigeration and Air-conditioning 1A and 1B</td>
<td>2</td>
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<tr>
<td>TS431 Supervision 1A</td>
<td>1</td>
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<tr>
<td>TS432 Supervision 1B</td>
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<td>Advanced</td>
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<tr>
<td>TF457 Mechanical Design 2A and 2B</td>
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83652G Certificate of Technology — Mechanical Design Drafting
(1981 Syllabus)

Career potential
Graduates with a Mechanical Design Drafting Certificate are employed as draftsmen, 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 car 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 Drawing/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 1</th>
<th>Unit value</th>
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<td>TF310</td>
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<tr>
<td>TF311</td>
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<tr>
<td>TM118</td>
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<tr>
<td>TF315</td>
<td>1½</td>
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<tr>
<td>TF316</td>
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<table>
<thead>
<tr>
<th>Stage 2</th>
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<tbody>
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<td>TF483</td>
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<tr>
<td>TF484</td>
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</tr>
</tbody>
</table>

Total 30

83622G 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, 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 relating studies.

Core units

<table>
<thead>
<tr>
<th>Unit value</th>
</tr>
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<tbody>
<tr>
<td>TF420</td>
</tr>
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Total 30
## Elective units

### Engineering practice and related studies

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit value</th>
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</thead>
<tbody>
<tr>
<td>TF230</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>Production Processes and Development 1A and 1B</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>
<tr>
<td>TS239</td>
<td>Introduction to Economics 1B</td>
</tr>
<tr>
<td>TS243</td>
<td>Introduction to Law 1A</td>
</tr>
<tr>
<td>TS244</td>
<td>Introduction to Law 1B</td>
</tr>
<tr>
<td>TS120</td>
<td>Data processing</td>
</tr>
<tr>
<td>TS150</td>
<td>Production Techniques</td>
</tr>
<tr>
<td>TS151</td>
<td>Production Techniques 1B</td>
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</tbody>
</table>

### Advanced

<table>
<thead>
<tr>
<th>Advanced</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TF330</td>
<td>Materials and Processes 2A</td>
</tr>
<tr>
<td>TF221</td>
<td>Applied Mechanics 2A and 2B</td>
</tr>
<tr>
<td>TF427</td>
<td>Applied Heat 2A and 2B</td>
</tr>
<tr>
<td>TF450</td>
<td>Production Processes and Development 2A and 2B</td>
</tr>
<tr>
<td>TS250</td>
<td>Production Techniques 2A</td>
</tr>
<tr>
<td>TS251</td>
<td>Production Techniques 2B</td>
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### Course to be introduced in 1983 subject to approval

#### Certificate of Technology — Manufacturing Engineering

<table>
<thead>
<tr>
<th>Core subjects</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td>Mathematics 1P</td>
<td>2</td>
</tr>
<tr>
<td>Communication 1A &amp; 1B</td>
<td>1 each</td>
</tr>
<tr>
<td>Technician Drafting</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Materials and Processes 1AD &amp; 1BD</td>
<td>1</td>
</tr>
<tr>
<td>Jig and Tool Drafting</td>
<td>2</td>
</tr>
<tr>
<td>Metrology 1T</td>
<td>2</td>
</tr>
<tr>
<td>Industrial Supervision</td>
<td>2</td>
</tr>
<tr>
<td>Modern Metal Cutting</td>
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<tr>
<td>Materials Handling 1B</td>
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<tr>
<td>Computer Aided Design/Computer Aided Manufacture — Basic</td>
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### Electives

<table>
<thead>
<tr>
<th>Electives</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialised Machine Tools</td>
<td>2</td>
</tr>
<tr>
<td>Engineering Materials 2A &amp; 2B</td>
<td>1 each</td>
</tr>
<tr>
<td>Engineering Processes 2A &amp; 2S</td>
<td>1 each</td>
</tr>
<tr>
<td>Welding and Fabricating</td>
<td>2</td>
</tr>
<tr>
<td>Computer Aided Design/Computer Aided Manufacture — Advanced</td>
<td>2</td>
</tr>
<tr>
<td>Robotics</td>
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<tr>
<td>Materials Handling 2AB</td>
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</tr>
<tr>
<td>Reliability and Prototype Testing</td>
<td>1</td>
</tr>
<tr>
<td>Organisation for Quality Control</td>
<td>2</td>
</tr>
<tr>
<td>O &amp; M for Quality</td>
<td>1</td>
</tr>
<tr>
<td>Product Liability and Product Recall Management</td>
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<tr>
<td>Quality Costs and Budgeting</td>
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<tr>
<td>Electrical Manufacturing Techniques</td>
<td>1</td>
</tr>
<tr>
<td>Hydraulics and Pneumatics</td>
<td>1</td>
</tr>
<tr>
<td>Finishing Processes</td>
<td>1</td>
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<tr>
<td>Job Instruction and Presentation</td>
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</tbody>
</table>

Certificate to be awarded on completion of 30 units
83651G  Certificate of Technology —
Production (Tooling Design)

Career potential
This course supersedes the Higher Technician Certificate Jig
and Tool Design Drafting and is available only at Swinburne.
The course has been designed to suit the requirement of in-
dustry in the areas of Jigand 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 designed 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 ior
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 Leaving Technical 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 ex-
perience. This may be the completion of the
workshop practice modules of the fitting and machin-
ing 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.

Note
Where Principals vary the prerequisite academic quali-
fications, 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>Year</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>Year 1</td>
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<tr>
<td>TM125</td>
<td>Mathematics 1H</td>
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<tr>
<td>TF216</td>
<td>Applied Mechanics 1P</td>
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<tr>
<td>TF154</td>
<td>Mechanical Drafting (Pred)</td>
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<tr>
<td>TH115</td>
<td>Communication 1A</td>
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<tr>
<td>TH116</td>
<td>Communication 1B</td>
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<tr>
<td>TF120</td>
<td>Ergonomics</td>
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</table>

| Year 2 |            |
| TF128  | MIC Tools and Processes | 2 |
| TF216  | Materials and Heat Treatment | 2 |
| TF291  | Applied Mechanics 2P | 1 |
| TF355  | Gauge Drafting | 1 |
| TF280  | Jig and Tool Drafting | 4 |

| Year 3 |            |
| TF380  | Jig and Fixture Drafting and Design 1 | 4 |
| TF381  | Metal Cutting 1 | 2 |
| TF228  | Advanced MIC Tools | 2 |

| Year 4 |            |
| TF280  | Jig and Fixture Drafting and Design 1 | 6 |
| TF290  | Die Drafting | 2 |
| TF389  | Moulding Drafting and Design 1 | 4 |
| TF390  | Die Casting and Forging | 4 |

| Year 3  | Total | 30 |
| Year 4  |       | 30 |
836246  Further Certificate of Technology — Quality Control

Career potential
In a highly technological and scientific world almost everything we come in contact with in everyday life is manufactured to a specific level of acceptance, whether it is on a ‘one-off’, batch or an assembly line basis.

The work of the quality control technologist is to ascertain to what extent the goods produced are within the levels of interchangeability, quality, safety and economic feasibility so vital to our manufacturing industries.

The far-reaching effect of tasks performed by quality control technologists include:
  a) protecting the consumer against the purchase of faulty manufactured goods,
  b) Maintenance and promotion of the company’s image and reputation.

The field of application of quality control covers most industries including clothing, metal trades, electrical and food industries. Career opportunities are equally varied.

Entrance requirements
The standard entrance requirements for admission to the course are:
  a) satisfactory completion of a Certificate of Technology or a Certificate of Applied Science with 2 years of relevant industrial experience.
  b) experience and maturity, sufficient to undertake the course, and to be employed in some function of quality control.

Prospective students who do not fit exactly into the category (a) as shown should not be deterred from applying, as the course is designed to enable students from various fields involved in quality control to complete the Further Certificate.

Duration of course
2 Years

Course structure
The Further Certificate course is structured around 5 units of core subjects and a choice of 3 units of elective subjects.

Core subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
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<tbody>
<tr>
<td>TM127</td>
<td>Statistics</td>
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</tr>
<tr>
<td>TM180</td>
<td>Statistical Quality Control 1</td>
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</tr>
<tr>
<td>TF195</td>
<td>Organisation and Management for Quality A</td>
<td>1</td>
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<td>TF196</td>
<td>Organisation and Management for Quality B</td>
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Elective subjects

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<tr>
<td>TM280</td>
<td>Statistical Quality Control 2</td>
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<tr>
<td>TF340</td>
<td>Principles of Measurement</td>
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<td>TF317</td>
<td>Dimensional Metrology</td>
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<tr>
<td>TF251</td>
<td>Computer Appreciation and Applications</td>
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</tr>
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<td></td>
<td>to Quality Control</td>
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</tr>
<tr>
<td></td>
<td>Reliability and Prototype Testing</td>
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</tr>
<tr>
<td></td>
<td>Quality Costs and Budgeting</td>
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</tr>
<tr>
<td></td>
<td>Product Liability</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Product Recall Management</td>
<td>1</td>
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<tr>
<td></td>
<td>Quality Control Systems and their Assessment</td>
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<tr>
<td></td>
<td>Human Factors</td>
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</table>

Post-trade courses
83670E  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.

This tool and gaugemaking course is of three years’ duration and available both day and evening i.e. one half-day or two evenings per week.

Prerequisites
Completion of a fitting and machining apprenticeship course in the basic twenty modules, plus four alternative modules from certain streams (C, 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
Relieved cutters, jig boring, thread gauges, form tool, taper reamer, taper gauges.

3rd year
TF505 Toolmaking Theory 3
TF506 Toolmaking Practice 3

Unit 1
Thread grinding 2, relief turning 2, cams, cutting tools, tool materials, jig boring 2, electro-machining, precision grinding.

Unit 2
Screw thread measurement, calculations, single and compound angles, optical measuring methods.

Unit 3
Thread grinding 3, cam manufacture, cutting tool manufacture, jig or bush plate, electrode manufacture, surface grinding.
The courses have been designed to meet the increasing demand for general instruction in employment. There are seeking welding qualifications in connection with their Government Welding Certificates in accordance with Entrance requirements. 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>
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</thead>
<tbody>
<tr>
<td>TF710 Electric Welding Theory 1</td>
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<tr>
<td>TF711 Electric Welding Practice 1</td>
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<tr>
<td>TF810 Electric Welding Theory 2</td>
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<tr>
<td>TF811 Electric Welding Practice 2</td>
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<tr>
<td>TF910 Electric Welding Theory 3</td>
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</tr>
<tr>
<td>TF911 Electric Welding Practice 3</td>
<td>4</td>
</tr>
</tbody>
</table>

Electric Welding (Special Course)
A short course to enable qualified tradesmen to improve knowledge and skills in order to pass special government welding examinations.

Introduction to Welding
A semester course designed to introduce tradesmen and others, working in allied trades to welding skills and to facilitate their entry into general welding courses.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF315 Electric Welding Special</td>
<td></td>
</tr>
</tbody>
</table>

83602R Fitting and Machining — Other than Apprentices
Career potential
This is an evening course in basic machine shop practice to provide engineering draftsmen and others working in allied trades 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.

Prerequisite
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

Machines and materials subject details

Air-conditioning 1T (TP348)
The study of air, temperature, humidity, the gas laws and how to use them. Change of state from liquid to vapour; superheated steam 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.

Air-conditioning 2T (TP448)
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.

Applied Electricity 1H (TE110)
This course provides the fundamentals for subsequent studies in the course Electrical Drafting and Electrical Power. The main areas of study are electrical fundamentals, network analysis, magnetism, instruments and measurements, electromagnetism, electronics, 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 analysists, AC meters.

Applied Heat 1T and 1A and 1B (TF329)
Emphasis is placed on the qualitative development of the following topics: Temperature measurement and control, heat and heat transfer, behaviour of gases, properties of steam, boilers and turbines, combustion, IC engines, air compressors.

Applied Heat 2T and 2A and 2B (TF430 and TF432)
Extension of Applied Heat 1T. Steady flow energy equation, power cycles, boiler plant, condensers, turbines, refrigeration, combustion, heat transfer.

Applied Mechanics 1A and 1B (TF121)

Applied Mechanics 2A and 2B (TF221)

Applied Mechanics 1A and 1B (TF235 and TF236)
(2 units)
Forces, stress, strain, elasticity, modules of rigidity, Poisson’s ratio, stress concentration, fatigue, beam theory, deflection of beams, torsion of shafts, columns, springs, cams, combined loading, combined stresses.

Applied Mechanics 2A and 2B (TF320 and TF322)
(2 units)
Analysis and principles of multi-element systems, positive and non-positive drive systems and the application of appropriate codes.

Applied Mechanics 3A and 3B (TF328)

Behavioural Studies 1A and 1B (TS215 and TS216)
Becoming aware of one’s potentialities, interpersonal relationships, conflicts, difficult problem solving, sociology, and psychology. Limitations in handling certain situations and problems.
Bollermaking

Module 1 (TF601)
Introduction to the trade, lifting and lowering by hand, stacking of materials correctly, 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, oxygen-acetylene 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 weld 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)

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 joint, layout and fabrication of pressure pipe branch.

Module 13 (TF613)
Marking out cutting and fabrication of columns, fabrication and assembly of tapered flange beams.

Module 14 (TF614)
Characteristics of electric welding current, electrode selection anti characteristics. Electric welding techniques, fillet, multipass, horizontal pad, butt, plate to sections.

Module 15 (TF615)
Gas for TIG and MIG welding. Arc welding techniques on TIG, MIG and submerged arc. MIG welding and butt welds. TIG welding outside corners, submerged arc butt weld. Arc on gouging.

Module 16 (TF616)
Development of flat and curved surfaces. Exercises in the development of shell plate, pipe gusset, conical sections, offset hoppers, rectangles 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. Steel 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-track right-hand conveyor screw layout, development and fabrication of 30° set-on pressure pipe branch offset.

Module C22 (TF622)
Module C23 (TF623)
Module C24 (TF624)
...still in development stage

Communication 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.

Computer Applications 1A and 1B (TA441 and TF441)
The aim is to interpret data from printouts. Topics: fundamental rules in using COBOL and FORTRAN, program development. Application: sales, production control, stock control etc.

Computer Techniques 1A and 1B (TF353)
A basic course in microprocessors considering hardware and software organisation. The areas covered are: organisation of computers, memory types, memory organisation, MPU, operation of MPU with memory, addressing modes, instruction set, binary arithmetic, condition code register, programming techniques, minimal system, interrupt system, the stack, sub-routines, PIA, ACIA, timing, DMA, programming aids, diagnostics.

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 given particular problems and how they should be introduced.

Design for Economic Manufacture 1AD (TF453)
Capabilities of workshop machine tools, forging and fabricating 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 businesses with batch sizing and economical order quantities.

Drafting Practice 1T (TF358)
Geometric constructions relative to the interpretation of paper, and drafting. Construction of points, circles and loci of points in mechanisms. Detail drafting relative to dies, forgings and fabricated parts.

Drafting Practice 2T (TF456)
The aim of the course is to provide an appreciation of drafting conventions used in mechanical, electrical and civil engineering and to develop an ability to interpret drawings and extract information from them.

Types of circuit diagrams, drawing office practices, presentation of circuit diagrams, drawing office practices, typical electrical drawings.

Electrical Machine Applications 1A (TE410)
Elementary generators, DC generators, DC motors, alternators, AC motors, transformers, starters, switches, protective devices, motor selection, installation equipment.

Properties of metals, characteristics of non-ferrous metals, plain carbon steel, alloying elements, cast iron, heat treatment, hardening, bearing materials, timber, concrete and lubricants, applications and usage of machine tools, casting, forging, materials handling.

This three hour per week, single year subject is a limited but very practical introduction to some of the various aspects of plant and manufacturing engineering. This subject is broken up into twelve hours welding practice, twelve hours surveying practice, and the remainder of the workshop of projects using the lathe, drilling and milling machines, and the shaper or slotter, as well as some initial elementary fitting work.

Forces, moments, pin-jointed frames, kinematics, curvilinear motion, collisions, circular motion, friction, energy, work, power, sound, fibre optics.

Development of ability to read with comprehension and appreciation. Practice in oral and written English. Preparation of clear, concise notes and summaries.

Use of library material, preparation of reports, debating, extension of practice in oral and written English.

This syllabus is concerned with giving students a basic understanding of ergonomics and how it may be applied to all walks of life, to improve overall efficiency, reduce fatigue and to reduce the incidence of accidents. Although this subject will be biased towards production engineering, examples of domestic situations will also be used to emphasise the wide application of ergonomics.


Safety, Operational planning

Chipping and filing, Screw threads, Drills and drilling. Benches and vices.

Turning operations. Cutting fluids. Equipment used for setting up. Science and materials.

Filing, Drilling, Machine cutting tools.

Turning operations. The shaping machine.

Screwcutting, Grinding.

Drilling, Science and materials. The planing machine. The slotting machine.

Lathe operations, cemented carbide cutting tools, economical use of machine tools, indicators.

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.

Screw cutting, form turning, Turret and capstan lathes.

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, checking a lathe for accuracy, setting up and marking out, scraping, lubricants, work holding methods.

Revision of trigonometry, transportation, and substitution of formulae. Third angle projection, scale drawings, adjacent parts, assembly and detail drawings, sketching. Material testing methods and machines hydraulic, milling machine and operations, types and uses of cutters, arbors and adaptors, speeds and feeds, attachments.

Materials and heat treatment, pyrometry, plain carbon and alloy steels, surface hardening, nitriding.

Multiple start threads, locating methods, cutting and checking, gear ratios, revision of trigonometry, calculations, tool sharpening.

Operational planning and production tooling. Uses of jigs and fixtures, consideration of machining operations, technical sketching and detail drawing, surface finish symbols.

Precision cylindrical and surface grinding, plain and universal cylindrical grinding machines, parallel grinding and grinding to a shoulder, lapping work centres, surface grinding and angular surfaces, work holding methods.

Revision and craft examinations

Fitting and Machining — Alternative Modules

General Fitting A51/A52/A53 (Industrial Hydraulics)
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 liquids, transmissions, servo mechanisms and trouble-shooting of systems.

General Fitting A54/A55 (Industrial Pneumatics)
Gas laws, basic principles, a basic system, actuators, directional control valves, air service units, speed control, compressors. Miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance standards, gauging units and air lubrication of bearings.

General Fitting A56
Portable power tools, press fits, preparation for welding, plastics, adhesives and glues.

General Fitting A57
Installation of equipment, safety precautions, uses of plant, equipment, testing of machines.

General Fitting A58
Power transmission, clutches, brakes, bearings. Special tools, prevention maintenance.
Welding BS1/BS2/BS3/BS4 (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 BS5/BS6/BS8 (Electric arc welding)
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, weld testing, pre-heating and post-heating procedures.

Gear Cutting F51, F52, F53, F54  
(TF045, TF046, TF047, TF048)
Types and elements of gearing for parallel shafts. Milling spur tracks and gears, helical racks and gears, hobbing spur gears, helical gears and worm gears. Production of gears by generating. Worm gearing.

Tool and Gauagemaking 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 gauagemaking.

Construction Equipment C51/C52/C53 (Industrial Hydraulics)  
(TF089, TF090, TF091)
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 liquids, transmissions, servo mechanisms and trouble shooting of systems.

Construction Equipment C54 (Industrial Pneumatics)  
(TF092)
Compressors, miscellaneous components, air lines, moisture control, circuits, seals, air motors, maintenance, standards, air gauging units and air lubrication of bearings.

Fitting and Machining (other than Apprentices)

Module 1
Theory and practice. Safety principles, Principles of marking out, Hand-tools, files and filing, measuring and testing tools, the lathe, lathe operations, planning.

Module 2
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 3
Theory and practice. Files and filing, drills and drilling, turning operations, the shaping machine, machine cutting tools.

Module 4
Theory and practice. Files and filing, drilling, grinding practice, simple screw cutting, the slotting machine and planning machine.

Module 5
Theory and practice. Lathe operations, Cemented carbide cutting tools, economical use of machine tools, indicators.

Module 6
Theory and practice. Single start vee and square threads, form turning, turret and capstan lathe.

Module 7
Theory and practice. Accurate fitting and maintenance of pumps, clutches and bearings, checking a lathe for accuracy, marking out, scrapers and scraping, lubricants.

Module 8
Theory and practice. Milling operations, the milling machine indexing, tooth forms of milling cutters.

Module 17

Module 19
Theory and practice. Precision cylindrical grinding, surface grinding.

Module 20
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (three hours) and practical examination (five hours) of work covered in modules 1-19.

Module 21-24 inclusive

Fluid Machinery Applications 1AD (TF375)
Fluid statics and dynamics problems and principles as applied to engineering components. Selection and application of turbine machinery. Principles of water flow in pipes, pipe sizes and pump applications.

Fluid Power 1 (TF379)
The emphasis of this course is on the basic scientific principles that describe the behaviour of hydraulic and pneumatic components. Explanation and description of actual equipment performance is at the core of this course.

Fluid Power 2 (TF477)
Knowledge of hydraulic and pneumatic components is assumed. Emphasis of this course is on the analysis and design of power and logic circuits.

Foundations 1A and 1B (TB408)

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, carburizing, nitriding and induction heating. Metallography preparation of specimens, micro-examination of both unheat-treated and heat-treated steels. Hardness testing, mechanical testing of steels.

Industry and Society (TS120)
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 (TF338)
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 evaluations, non-destructive testing methods.

Instrumentation 1 (TF339)
Extension of metrology and machining 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 evaluations, 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-making and decision-making, general management tasks, basic business functions — financing, purchasing, staff production, sales and marketing, operating techniques and controls of above.
Introduction to Design 1A(1) and 1B (TF455 and TF555)
Written and oral communication, job brief, design influencing factors, calculations from reference material, economics, functional design of levers, wheels, shafts, keys, brakes and couplings.

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 income. Introduction to Economics as an introductory drafting subject. All topics are covered where possible. The subject consists of the following:

- Algebra, logarithms, indices, simultaneous equations, quadratic equations, use of calculators, computer hardware and software, use of BASIC language.
- References

Mathematics 1A (TM118) (1 unit)
Algebra, logarithms, indices, simultaneous equations, quadratic equations, use of calculators, computer hardware and software, use of basic language.

References

Mathematics 1B (TM120) (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.

Mathematics 2H (TM220)
Two hours per week, day/night for one semester. Part-time, two hours per week daytime or evening, for two semesters. Prerequisites: TM120 Mathematics 1B. 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 and integration; equation of tangents and normals; graphs of polynomial functions; integration and antidifferentiation; complex numbers; small increments and approximation; calculus and rates; 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 axes theorem, centre of pressure. Revision tests are also included throughout the year.

References
- No set text is required. Books covering the subject are supplied.
- The following texts are recommended for background reading:

Mathematics 1T (TM130)
Two hours per week daytime or evening, full year. Prerequisites: Yr 10 mathematics or equivalent and adult entry. Assessment: Periodic tests and assignments. 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.

Materials and Processes 1A (TF230)

Materials and Processes 2A (TF330)

Machine Design 1A (1B)(TS239)
Design and drawing of simple drilling, boring, turning and milling jigs and fixtures, together with basic design techniques of clamping and location, cover this introductory drafting subject. All drawings are prepared on A2 tracing paper and are drawn to AS1100 drawing standard.

Jig and Tool Drafting 1T (TF359)
Jig and Tool Drafting 2T (TF459)

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.

Technician Drafting (metal trade technicians) (TF126)
Students usually study Drawing A. A pass in Printing and Machining Trade Drawing 2 may be acceptable for certain courses. Projection, arrangement and detail drawings. Methods of fastening, transmission, dimensioning, introduction to structural steel framework.

Machine Shop Practice 3A and 3B (TF115)
Multi-threaded single machine, machine grinding, milling, jigs and fixtures.

Machine Shop Practice 4A and 4B (TF216)
Casting, advanced machining.

Machines and Mechanisms 1A and 2B (TF416)
The subject provides revision of basic applied mechanics and covers bearings (including epicyclic, helical, hypoid and worm applications), couplings and static and dynamic balancing of reciprocating masses, chain drive design, vibrations in machine design, variable speed drives, differential gears and a number of miscellaneous mechanisms. All topics are covered using practical examples and suitable excursions where possible.
Mathematics 2T (TM230)
Two hours per week, evening over two semesters. Prerequisites: Mathematics 1T, adult entry, or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: class work (forty per cent) and one final examination (sixty per cent).

Mathematics 1E (TM123)
Full-time: Five hours per week (day) over one semester; Part-time: Two hours per week (day) over two semesters. Prerequisites: Completion of year 11.

Assessment consists of two parts
1. Topic tests, one on each topic, contributing to thirty per cent of the final mark.
2. One three-hour examination held in mid-June (or in November) contributing to seventy per cent of the final mark.

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 Mathematics/Science head of department. Assessment: Classwork (thirty per cent) and one final examination (seventy per cent).

An extension of Mathematics 1E (TM231) the topics include complex numbers, limits, differentiation and applications, integration and applications, differential equations, Boolean algebra.

Mathematics 3H (TM220)
Three hours per week day or evening over two semesters. Prerequisites: Mathematics 2E or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: Computer assignments (twenty per cent), classwork in Applied Mathematics (thirty per cent), and one final examination (fifty per cent).

The final stage in mathematics for the CET (Electronics) subject consists of review of complex numbers, hyperbolic functions, review of differentiation, partial differentiation Company Inc., 1979.

References are supplied notes

Mathematics 1P
Use of calculator, algebraic manipulation, solution of linear, quadratic and simultaneous equations. Logarithms and trigonometry. Calculation of perimeter, area and volume of standard and composite shapes.

Mechanical Design 1A and 1B (TF458)

Mechanical Design 1AD and 1BD (TF223 and 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 (TF4.57)

Mechanical Design 2AD and 2BD (TF468 and TF469)
Analysis of design problems to determine loadings of machine elements and structural components. Analytical design of structural and mechanical components and general plant equipment. Selection of equipment from manufacturer’s catalogues and the use of codes and other reference material including costing and oral and written reports in developing the design approach.

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 Properties H (TF331)
Fundamental tests — tensile (room and high temperature), impact (room and sub-zero temperature), compression, shear, torsion, fatigue (room and high temperature), creep, hardness and cuping. Verification of correct heat treatment. Typical defects and guide to critical nature of castings, forgings, extrusions, rolled products, weldments, plastics and other non-metallic materials. Testing for surface defects. Testing for internal defects. Preparation of work for testing methods methods employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results

Mechanical Drafting 1A and 1B (TF180)
This subject is concerned wholly with the development of basic theory and drafting skills relating to the elementary design and drawing of mechanical elements and mechanical power transmission equipment. Specific subjects include bearings, gears, limits and fits, fasteners, 'V' belt and chain drives etc. All drafting, comprising both sketching and formal drawing is done on tracing paper and is specifically oriented to Industrial drawing office procedure using AS1100 drawing standard. (Leaving Drawing or equivalent is the necessary prerequisite).

Mechanical Drafting 1AD (TF150)
Furniture and equipment, use of ASCZI, sectioning, assembly and detail drawing, developments (solid geometry).

Mechanical Drafting 2AE and 2BE (TF259)
This drafting subject is similar in format and content to Mechanical Drafting 2AK and 2BK. Emphasis placed on the practical development of assembly and detail drawings to AS1100 drawing standard. The drawings are prepared on A2 tracing paper and cover the field of practical design by using mechanical elements and equipment used for mechanical power transmissions e.g. gears, couplings, splines, shafts, various types of bearings etc. This subject is assessed by an external drawing examination at the end of the second semester

Mechanical Drafting 2AS (TF250)
Functional design of components. Details of welded components, pipe fittings and symbols.
Mechanical Drafting 2AK and 2BK (TF258)

This is a continuation of the mechanical drafting subject and follows the same format as 1AK and 1BK, with the additional emphasis placed on drafting power transmission elements, such as gears, etc. Both Mechanical Drafting 1AK and 1BK and 2AK and 2BK form a combined two-year subject. This subject is internally assessed.

Mechanical Drafting (Production)

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, tapers, hydrostatics, and fluids in motion. Laboratory work.

Mechanics 1T (TF319)

Vectors, rectilinear and angular motion, acceleration, 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.

Mechanics of Fluids and Fluid Machinery 1A and 1B (TF479)

The course of study offered introduces the students to basic fluid mechanics principles with the accent on user-oriented studies. The subject is run for three hours per week for the whole year. The syllabus outline is as follows — properties of fluids, perfect and real, hydrostatics of plane submerged surfaces, kinematics as it evolves, basic equations of continuity, energy and momentum, flow measurement methods, fixed and moving jets, general momentum theorem, flow in closed conduits, friction factor and other losses, dimensional analysts and similarity, rotodynamic machinery — pumps, fans, fluid coupling, and torque converters.

Metallurgy 1T (TF227)


Method Study (TF439)


Metrology and Inspection H (TF121)

A more theoetical approach to the fields of metrology and gauging. Emphasis is placed on equipment used, component identification reference to various current standards. Metrology 1T may be considered a prerequisite.

Metrology 1A and 1B (TF318)


Metrology 2T (TF420)

Length metrology, measurement of angles, straightness and flatness. Optical measurement of screw threads. Errors in measurement. Surface texture.

Organisation and Management of Inspection (TF461)

This subject deals with quality control through management. Topics include: basic management concepts, sampling schemes, design and development tests, and trials, legal obligation, safety, training methods. Physics 1H (TM160)

Five hours per week (full-time) during the day or one semester or two hours per week (part-time) during the day or evenings for two semesters.

Prerequisites: Students must have completed Year 11 Physics. Assessment consists of assignments and tests for each individual core topic and 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, dynamic, work-power-energy-momentum and electro-statics. The electives include topics such as: thermodynamics, electricity, statics, acoustics, fluid mechanics and electromagnetism. 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 booklets. However, if further reading it is required the texts most suitable are those with the 'basic physics' titles or 'introduction to physics', provided they deal in 5 units.

Physics 2H (TM260)

A course designed to introduce students to the methods and techniques of experimental physics and the operation and use of a wide variety of equipment. It is mainly a practical course. The work is carried out in the fields of optics, electrical circuits, electronics, electronic measuring equipment and photography. Other activities include student projects and visits to laboratory installations.

Process Heating (TP237)


Production Control H (1A and 1B) (TF440)

A more theoretical approach to the methods of materials, forming processes, plastics, precision casting, modern processes: laser beam machining, electron beam welding, numerical control of machine tools. Prerequisites are Trade Technician or Machine Shop 1H and 2H. Fitting and Machining 5 or Toolmaking 1 and Production Processes and Development 1T, 11, or approved electives.

Production Processes and Development 2A and 2B (TF450)

A more theoretical approach to the machining of materials, forming processes, plastics, precision casting, modern processes: laser beam machining, electron beam welding, numerical control of machine tools. Prerequisites are Trade Technician or Machine Shop 1H and 2H. Fitting and Machining 5 or Toolmaking 1 and Production Processes and Development 1T, 11, or approved electives.

Production Processes and Development 1T (TF417)


Production Techniques 1A (TS150)

Introduces manufacturing industries and sub-systems. Types of production organisations. Processes and controls applied in qualitative and graphic form enabling the conversion of market requirements into saleable inventory.

Production Techniques 1B (TS151)

Advance 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 and control to achieve economic operation in 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 Electrical Materials 1A and 1B (TE228)


Properties of Materials 1AD (TE232)

Die penetrant, magnetic particle, X-ray, ultrasonic, eddy current, tensile, compression, impact and fatigue testing. Metal failure, corrosion, polymers and fabrics, shaping of plastics, adhesives, electrical materials.
Properties of Materials (TF234)
Metallurgy, ferrous alloys, testing of metals, magnetic alloys, non-ferrous metals and alloys, non-metallic materials—joining of metals, processes applied to electrical apparatus, corrosion.

Refrigeration 1T (TP349)

Refrigeration 2T (TF449)
The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, capacity control. 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, psychrometric 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 H (TF442)
Emphasis is placed on design experiments to ensure reliability. Topics include basic theory (statistics, fundamental concepts of reliability design development and manufacture) or reliability. Data collection.

Science 1T (TM170)
Two hours per week, day or evening over two semesters. Prerequisites: Year 1B 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, 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: Year 1B 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, kinematics, Newton’s three laws of motions, work, power, and energy, heat, Ohm’s law, and basic electric circuits.

Supplied notes
Students enrolled in TM270 usually study Mathematics (TM230) concurrently, the two subjects being time-tabled in a four-hour block.

Statistical Analysis H (TF421)
Basic use of statistics in the field of process control. Topics include basic theory, process control variables and ‘attributes’, acceptance sampling, significance and testing.

Structural Drafting 1A and 1B (TB195)
Usual prerequisite for this subject is a pass in Leaving Technical Drawing A. Course includes practical drafting and lectures on use of steel, wood, metal, splicing, connectors, standard drawing practice. Structural terms, reinforced concrete, timber.

Structural Drafting 2A and 2B (TB295)
Usual prerequisite is a pass in Structural Drafting H. Project drafting work and necessary theory in structural features, external features, multi-storey buildings, concrete projects, detailing from an engineering specification.

Structural Mechanics 1A and 1B (TB197)
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.

Structural Mechanics 2A and 2B (TB297)
Allowable safe stress, bending movement and shear force diagrams and calculations. Design of beams, columns, plate girders, roof trusses. Reinforced concrete design.

Structural Practices 1A and 1B (TB196)
Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial type buildings.

Structural Practices 2A and 2B (TB296)
Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

Supervision 1H (1A and 1B) (TS431 and TS432)
The aims of the course are to enable the student
(a) to understand and apply basic principles of supervision within the structure of a business organisation,
(b) to gain a basic understanding of human behaviour and be able to apply this knowledge in a supervisor’s position.

Thermodynamics and Heat Transfer 1AD (TF412)
Thermodynamics and heat applications, generation of steam, principles of heat exchanger, applications and selection of air compressors and internal combustion engines. The selection of fuel. Energy conservation.

Toolmaking (other than Apprentices)

TF501/2 First Year Theory and Practice

TF503/4 Second Year Theory and Practice

TF505/6 Third Year Theory and Practice
grinding. Optical measuring methods, monochromatic light, polygons, auto collimator and alignment telescope.

Tooling and Inspection Methods (TF370)

Three important production engineering areas are covered in this subject: Metrology includes measurement. Jig and fixture design covers the basic principles of clamping and location and includes simple sketched designs of jigs, boring and milling jigs and fixtures. Quality control includes the use of statistics to achieve control through batch-sampling techniques and includes probability and sample control charts etc.

Trade Electronics Th. 1 (TE116) Pr. 1 (TE117) — see "Industrial Electronics IT"

Trade Electronics Th. 2 (TE216) Pr. 2 (TE217) — see "Industrial Electronics 2T"

Trade Electronics Th. 3A (TE313) Pr. 3A (TE314) — see Industrial Electronics 3T (General)

Trade Electronics Th. 3C (TE317) Pr. 3C (TE318) — see "Industrial Electronics 3T (digital control)"

Welding

Electric Welding. Theory 1 (TF710)


Electric Welding Practice 1 (TF711)


Electric Welding Theory 2 (TF810)


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 HIC position up to 12 mm, 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 Vul flat, vertical and down, horizontal. Prepared structural sections solid and hollow, flat position. Demonstrations of other welding processes e.g. TiC, MIG, resistance, submerged arc, etc. Operational experience on a many units as possible.

Electric Welding Theory 3 (TF910)

General knowledge of SAA codes relating to welding. Safety requirements, welding, cutting, general 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. Alloy 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, frication.

Electric Welding Practice 3 (TF911)

Fillet welds, all positions, full range of sizes and types, 6 mm and smaller. Welding of 1.6 mm LCS sheet. Butt welds, square and prepared, all positions, 1.6 mm 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. Demonstrations of welding and cutting of special steels, ferrous and non-ferrous, with as many processes as possible.

Work Measurement 2A, 2B (TF282, TF283)


Work Measurement 3 (TF282)

Wage payment plans. Labour budgets and controls. Complete techniques project.

Work Methods Improvement 2A, 2B (TF284, TF285)


Work Methods Improvement 2C, 2D (TF286, TF287)


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 of 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 behavioural 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)
(Previously Work Measurement 1B (TF183))
The relationship of work measurement to 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) (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 with the advantages and limitations of MODAPTS. The identification of movement classes, terminal activities, simultaneous activities, indeterminate moves and other activities. The distinction 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.
general studies division

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**General Studies Division**

**Head**
G.A. Harrison, BSc, DipMechE, MEd

**Humanities Department**

**Head**
D. Bennett, BA, BEd

**Academic staff**

G. Arnott, BSc, BEd, GradDipBusAdmin
R.M. Carmichael, BA, BEd
J. Bono, BA
P.D. Caven, BA(Hons), DipEd
S. Chakran, BA, DipEd
J.A. Chandler, BA(Hons), DipEd
A.C.W. Jones, BA, BD, BEd, MRE
E.B. Jones, BA, BEd
J.A. Chandler, BA(Hons), DipEd
A. Krongold, BA, MEd(Studies)
P. Leck, BA, DipEd
S. MacKenzie, BA, DipEd
B. McLennan, BA, DipEd
D. Pike, BA, DipEd
A. Prins, BA, DipEd
D. Purdon, BA, DipEd, BA(Visual Art)
M. Sharp, BA, DipEd
K. Wiltshire, BA, STC

**Compensatory Education Unit**

P. Cross, BA, DipEd
R.J. Hannan, BSc, DipMet, MEd
J.R. Learmont, BA(Hons), MEd, MACE
A. Ryan, BA, ACTT
M. Sutherland, BA, DipSocWork

**Mathematics and Science Department**

**Head**
R. Gullan, BSc(Hons), MEd, MACE

**Academic staff**

P. Atkins, BSc, DipEd
G. Booth, DipChemEng, DipEd, GradIAust, GradChemE(Lond)
J.E. Browne, MSc, DipEd
C. Burgess, BSc, DipEd
C. DeMartinis, MSc, BEd
J. Dibb, BSc(Hons), DipEd
B. Falcone, BA, DipEd
J.A. Johnston, BScEd
W.V. Kaliviotis, BA, BSc, GAIE
M. Lawrence, BSc, ACTT
G. Lewison, BA, STC
B. Lim, BAppSc, BEd
P. Lim, FRMIT, BAppSc, STTC, GAIP
G.A. Lisowski, PhD, DipEd
R. Marar, MSc, MEd, MACE
A. Newton, BSc, DipEd
D. Pratt, DipAppChem, DipEd
K.J. Robinson, BAppSc(Chem), TTechC
J.D. Scott, BAppSc, STTC
G. Tonkin, ARMIT, TTTC
B. Tyrer, BSc, DipEd
A. Zarnmit, BAppSc, DipEd
**General studies courses**

The following courses are offered by the General Studies Division:

**Tertiary Orientation Program**

- 84740J Humanities/Business — full-time
- 84741J Humanities/Business — part-time
- 84840J Science/Engineering — full-time
- 84841J Science/Engineering — part-time

**Certificate of Applied Science**

- 84820G Science Laboratory
- 84830G Biology

**Compensatory and Bridging**

- 84725Y Reading, Writing and Study Skills
- 84980Y Compensatory Education
  - English Workshop
  - Volunteer Tutor Training
  - Individual Learning (Numeracy and Literacy)

**Tertiary Orientation Program**

The Tertiary Orientation Program at Swinburne 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**

Sixteen 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.

Students who intend to proceed to tertiary science and engineering courses are encouraged to take English, Chemistry, Physics, Mathematics and Concepts of Mathematics.

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)
- Concepts of Mathematics (TM027)
- Economics (TS008)
- English (TH010)
- History of Western Civilisation (TH015)
- Introduction to Modern Government (TH020)
- Introduction to Italian (TH035)
- Mathematics (Science) (TM026)
- Mathematics (General) (TM030)
- Media Studies (TH032)
- Physics (TM040)
- Study of Ideas — Philosophy (TH045)
- Themes in Australian History (TH001)

**Subjects to be introduced in 1983 pending approval**

- Law (TH006)
- Society, Technology and Change (TH055)

**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 (Knox) 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.

Closing dates for applications:

- TOP Science/Engineering 11 February
- TOP Humanities 9 December
- TOP Business 3 December

**Enquiries**

Information Office, 819 8444
Humanities/Business, 819 8370
Science/Engineering, 819 8378
Tertiary Orientation Program subject details

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 statement.

Art (TH003)
This subject is equally divided between a historical and theoretical study of art (particularly modern art) and practical art.
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. Elected 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 — compulsory
The scientific process
Plant and animal diversity
Internal organisation of higher plants and animals
Cells
Reproduction and genetics
Evolution
General topics — optional (one to be chosen)
Ecology (including populations)
Biological research
Pharmacology
Human genetics
Behaviour
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
Students are required to submit written reports on practical work.
Class questions-answer assignments
Assignments on films and excursions
Unit (topic) tests will be administered
Major assignment on student's own topic
Final end-of-year examination
References
Biological Science — The Web of Life, Canb., ACT, Australian Academy of Science, 3rd edn, 1981

Chemistry (TM005)
Prerequisite, Year 11 applied science standard chemistry
This subject comprises five hours per week, three hours of theory and a two-hour practical session in the laboratory.

Thermodynamics
Organic chemistry
Equilibrium, acid base, solubility, redox
Electrochemistry

Practical (25% of overall assessment)
Students are required to submit written reports on all practical work

Theory (75% of overall assessment)
— Topics tests
— Class assignments
— Final semester examination

Students are required to submit written reports on all practical work

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 shoes.
A laboratory coat and safety spectacles must also be worn at all times during the practical session.

References

Students will be provided with a practical manual and a set of theory notes 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 an insight into concepts of modern mathematics through an examination of applications of mathematics arising in the working world of the engineer and technician, 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 student's 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, small groups 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 retest. Credit is given on the basis of a credit examination given at the end of grade one. Students, who have still not passed any unit are given a final test on that unit at the end of semester two but are not eligible for the credit examination.

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 Games theory
7 Markov chains
8 Computer programming

References
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)**

A general course which 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, writing and aspects of Australian society.

**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 special emphasis is on Greece and Rome in the ancient world and the major problems confronting the western world in the twenty-first 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 Modern Government (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. Questioning of politics such as — its nature, elements and interaction, comparisons are made with the United States.

**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
15. Applied notes

**References**


A scientific calculator is essential.

**Mathematics (General) (TM030)**

Prerequisite: A pass in Year 11 mathematics

The aim of the course is to teach mathematics ideas and necessary skills to students who intend pursuing courses in business, social sciences and other tertiary courses such as physical education, nursing and physiotherapy. The syllabus covers sets, functions and relations, linear algebra, matrices, probability, statistics, sequences and series, calculus and computing.

**Media Studies (TH032)**

Media Studies involves an introductory 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 (Form 5) 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.

- Four (4) unit tests and assignments: 30 Marks
- Practical work (compulsory): 40 Marks
- End of semester examination: 80 Marks

<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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<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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<tr>
<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>
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<tr>
<th>Topic number</th>
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<tr>
<td>10</td>
<td>Simple Harmonic Motion</td>
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<tr>
<td>11</td>
<td>Electrodynamics</td>
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<tr>
<td>12</td>
<td>Electromagnetism</td>
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<td>13</td>
<td>Electric Currents</td>
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<tr>
<td>14</td>
<td>Light</td>
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<tr>
<td>15</td>
<td>Atomic Physics</td>
</tr>
<tr>
<td>16</td>
<td>Project (Electronics)</td>
</tr>
</tbody>
</table>

A pass in practical work is necessary for a pass in the subject as a whole.

Many references are suitable for this course. Some useful ones are:

- Gardiner, E.D. *Problems in Physics*, S.L. edn

A scientific calculator is essential.

**Study of Ideas (TH045)**

There are two separate courses in the Study of Ideas. Students take one course or the other, not both.
Study of Ideas I
It is an introduction to philosophy and generally acquaints students with some of the important developments in philosophy and other ways of viewing reality. The emphasis is on pure thought or reasoning about people, their relationships and their ways of viewing life, and their understanding of the world. It is concerned with various ways of viewing reality, including personal, existential, mythical, religious, scientific and philosophical, as well as the common man’s way of looking at life and the world.

Study of Ideas II
It is an introduction to psychology and generally acquaints students with the methods used by psychology in understanding people. This is a study of human behaviour and of some of the most useful theories for explaining behaviour.

The emphasis is upon human personality and how humans develop. Students investigate psychology through observations and experiments. Some basic statistical methods are used in order to measure the results of experiments. Whilst ability with mathematics is helpful, it is not essential. Topics studied include emotional and social development and how people think.

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.

Subjects to be introduced in 1983 pending approval.

Law (TS008)
An introduction to law with an emphasis on the role of law in the business world.

Society, Technology and Change (TH055)
An introduction to sociology with particular emphasis on the issue of the impact on new technology on society.

84820G Certificate of Applied Science (Science Laboratory)

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, educational and governmental laboratories are seeking trained technical staff.

The purpose of this course 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.

This certificate course is designed to meet the needs of people who intend to make their career in a laboratory environment.

The certificate course
The course is offered as part-time study, requiring usually, two evenings and one afternoon of attendance weekly over a period of four years. The first two years are common years, with students undertaking Physics, Chemistry, Mathematics and Communications. In the latter two years, students select from a wide range of subjects to meet their own interests or the demands of their work environment. An approved course comprises 24 units.

Generally students obtain a half-day release from their employers who, in return, gain benefit from their employee’s increased awareness and competence in modern technology. Although the vast majority of students undertake the course on a part-time basis, a full-time study program for the earlier units, can be arranged for students experiencing difficulty in obtaining employment.

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.

Entrance requirements
The usual requirement is that the students are employed in a laboratory and have completed a course of study at the fifth form 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.

Course structure
Category 1 (Common units)

<table>
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<tr>
<th>First year</th>
<th>Unit value</th>
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<tbody>
<tr>
<td>TA108 Chemistry 1</td>
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<tr>
<td>TA109 Chemistry Laboratory Techniques 1</td>
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<tr>
<td>TA121 Physics 15</td>
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<tr>
<td>TS122 Physics Laboratory Techniques 1</td>
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<tr>
<td>TA143 Computations</td>
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### Second year

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<td>Chemistry 25</td>
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<td>TA209</td>
<td>Chemistry Laboratory Techniques 2</td>
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<tr>
<td>TA211</td>
<td>Physics 25</td>
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<td>TA222</td>
<td>Physics Laboratory Techniques 2</td>
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<tr>
<td>TH115/6</td>
<td>Communication 1A and 1B</td>
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#### Category 2A (Technicians in industrial, college and governmental laboratories)

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit</th>
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<td>Statistics</td>
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<td>TA330</td>
<td>Methods of Separation</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TA430</td>
<td>Optical Methods</td>
<td>2</td>
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</tr>
<tr>
<td>TA451</td>
<td>Electrochemical Methods</td>
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<tr>
<td>TA456</td>
<td>Radioactive Methods</td>
<td>1</td>
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</tr>
<tr>
<td>TA457</td>
<td>Microscopy and Scientific Photography</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TA458</td>
<td>Vacuum Techniques</td>
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</tbody>
</table>

#### Category 2B (To be taken by school laboratory technicians)

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit</th>
<th>Core units</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA151</td>
<td>Biology 1A</td>
<td>1</td>
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<tr>
<td>TA152</td>
<td>Biology 1B</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TA210</td>
<td>Laboratory Workshop Practice 1A</td>
<td>1</td>
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<td>TA211</td>
<td>Laboratory Workshop Practice 1B</td>
<td>1</td>
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</tr>
<tr>
<td>TA212</td>
<td>Laboratory Management</td>
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#### Category 3 (Elective units)

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit</th>
<th>Core units</th>
<th>Unit value</th>
</tr>
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<tbody>
<tr>
<td>TA301</td>
<td>Biochemistry 1S</td>
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<tr>
<td>TA331</td>
<td>Organic Chemistry 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>TA332</td>
<td>Oil and Polymer Chemistry</td>
<td>1</td>
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</tr>
<tr>
<td>TA452</td>
<td>Quality Control</td>
<td>1</td>
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</tr>
<tr>
<td>TA459</td>
<td>Physics 25</td>
<td>2</td>
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</tr>
<tr>
<td>TA460</td>
<td>Microbiology 1S</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TA450</td>
<td>Introduction to Electronics</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>TA453</td>
<td>Glassworking</td>
<td>1</td>
<td></td>
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<tr>
<td>TF230</td>
<td>Materials and Processes 1A</td>
<td>1</td>
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</tr>
<tr>
<td>TA401</td>
<td>Biochemistry 2S</td>
<td>2</td>
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<tr>
<td>TA461</td>
<td>Microbiology 2S</td>
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<tr>
<td>TP330</td>
<td>Materials and Processes 2A</td>
<td>1</td>
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</tr>
<tr>
<td>TA441</td>
<td>Computer Applications</td>
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<tr>
<td>TA251</td>
<td>*Biolog 2A</td>
<td>1</td>
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<tr>
<td>TA305</td>
<td>*Educational Aid Techniques 1A</td>
<td>1</td>
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<tr>
<td>TA306</td>
<td>*Educational Aid Techniques 1B</td>
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<tr>
<td>TA308</td>
<td>*Educational Aid Techniques 1D</td>
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</tr>
<tr>
<td>TA470</td>
<td>Project</td>
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</tbody>
</table>

*These subjects are not recommended for Industrial Laboratory Technicians but will be offered for school Laboratory Technicians when demand warrants.

The project is subject to the students’ place of employment by special arrangement between the employer and the college staff.

### Dates for enrolments

Students may enrol for the course during the last week of the previous year (i.e. mid-December), the first three weeks of February of each year and for second semester subjects in the equivalent level studies.

Exemptions may be granted to students who have completed equivalent level studies, i.e. HSC subjects or 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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### 848306 Certificate of Applied Science (Biology)

**Venue**

The course is conducted at Burnley Horticultural College, Swinburne Technical College and Whitehorse Technical College 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 specialised 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.
- to enable students to exercise practical skills essential for a technician within the field of biology and to understand the theory pertaining to those skills so that they are able to make sound judgements 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.

Certain units are best studied in combination. These are indicated by unit numbers in brackets.
Code | Unit No. | Elective units | Unit value
--- | --- | --- | ---
TA225* | 35* | Methods of Specimen Preservation | 1*
TA460*/461* | 36* 37* | Microbiology I & II, IV | 4*
TA327 | 40 | Microprocessors | 1
TA457 | 41, 42 | Scientific Photography | 2
TA433* | 43* 44* | Native Fauna | 2*
TA430 | 45, 46 | Optical Methods | 2
TA445*/446* | 47 48* | Pharmacological Methods I & II | 2*
TA120* | 49* | Plant Propagation | 1*
TA470 | 50, 51 | Project | 2
TA452 | 52 | Quality Control | 1
TA456 | 53 | Radiocative Methods | 1
TA329* | 54* | Tissue Culture | 1*
TA448* | 55* | Vertebrate Zoology | 1*

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 previous work experience may also be admitted to the course.

Qualification for the certificate and exemptions
A pass gained 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, Hygiene and Infective Diseases and those units denoted with an asterisk, are considered to be characteristic of the course.

Further information
Course Co-ordinator Mr. C. DeMathis, 819 8055
Mathematics and Science Department Secretary, 819 8378

**Applied Science subject details**

Notes
1. Unless otherwise stated, 1 unit involves 3 hours per week for one semester.
2. Subjects marked thus (*) are not recommended for industrial laboratory.

**Biochemistry 15 (TA301) (2 units)**
Three hours per week for two semesters.
Assessment is based on assignments, unit tests and practical work.
Prerequisite: Chemistry 25. Background in biology an advantage
A study of conservation and dissipation of energy — types of biological compounds (properties and reactions) — metabolism — catabolic and anabolic — control and integration of metabolic pathways. Demonstrations of equipment — practical work.
Reference
Routh, R. Introduction to Biochemistry Philadelphia, Saunders, 1978

**Biochemistry 25 (TA401) (2 units)**
Three hours per week for two semesters.
Assessment: see teacher in charge.
Prerequisite, Biochemistry IS
Reference
See teacher in charge

*Biology 1A (TA151) (1 unit)
Three hours per week for one semester.
Assessment: assignments and laboratory reports.
Study of biological principles and materials. Awareness of the diversity of living organisms in nature and skills involved in handling of living materials.
Reference
Australian Academy of Science, Biological Science: Web of Life Students’ Manual, parts 1 and 2, 1981 edn, Canberra, 1981

*Biology 1B (TA152) (1 unit)
Three hours per week for one semester.
Assessment: based on written assignments submitted throughout the course.
Prerequisite: Biology 1A
Supply and maintenance of living organisms.
Sources and methods of obtaining organisms for biology. Maintenance of organisms in the laboratory.
Reference
See teacher in charge.

*Biology 2A (TA251) (1 unit)
Prerequisite: Biology 1A and 1B
Maintenance of macrobiological cultures in secondary school situations. Preservation of macroscopic and microscopic specimens.

Chemistry 1 (TA108) (1 unit)
Three hours per week for one semester.
Assessment: based on assignments and unit tests throughout the course.
Theoretical study of general chemistry. Atomic structure, chemical bonding, chemical notation, stoichiometry. Elements and compounds. Mixtures, ionic theory and applications. Introduction to organic chemistry.
References

Chemistry 25 (TA208) (1 unit)
Three hours per week for one semester.
Assessment: assignments and unit tests throughout the course.
Prerequisite: Chemistry 1 and Chemistry Laboratory Techniques 1
Theoretical study of dissociation, hydrolysis, oxidation and reduction, gravimetric and volumetric analysis and elementary organic chemistry.
References

Other class notes.

Chemistry Laboratory Techniques 1 (TA109) (1 unit)
Assessment: written reports and laboratory techniques.
Theory and practice including handling and storage of chemicals, laboratory safety and first aid, sampling, care and use of laboratory equipment, analytical procedures.

References

Chemistry Laboratory Techniques 2 (TA209) (1 unit)
Assessment: written reports and laboratory techniques.
Prerequisites, Chemistry 1 and Chemistry Laboratory Techniques 1
Laboratory safety, techniques of gravimetric and volumetric analysis, qualitative organic analysis.

References

Communication 1A and 1B (TH115, TH116) (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.

References
A class test 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 week for one semester.
Assessment is by projects and programming assignments given throughout the course.
Interpretations of printouts. Simple programming. — Basic, Fortran, program development. Applications. — sales, production control, stock control, etc.

References
FAGOM and DEC Manuals. Penguin.

*Educational Aids Techniques 1A, 1B, 1C, 1D (TA305, TA306, TA307, TA308) (1 unit each)
Operation and maintenance of a wide range of educational aids equipment. Production of simple educational aids materials.

References
See teacher in change

Electrochemical Methods (TA455) (2 units)
Three hours per week for two semesters.
Assessment: see teacher in charge.
Prerequisites, Chemistry 25 and Chemistry Laboratory Techniques 2
Principles and practice of conductivity, potentiometry, roulometry, electro-deposition, polarography and related techniques, as applied to Instrumental methods of analysis.

References
See teacher in charge.

Classworking (TA453) (1 unit)
Three hours per week (evening).
Assessment will be made on a number of items made during the course. Repair of laboratory glassware. Design and construction of simple glass apparatus.

References
See teacher in charge

Industrial Hygiene (1 unit)
Introductory theory course with emphasis on hazards encountered in the chemical laboratory and chemical plant.

References
See teacher in charge

Industrial Hygiene Measurement (1 unit)
Basic environmental principles, environmental pollution, sampling and measurement techniques, pollution control methods.

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 practice 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

Laboratory Management (TA212) (1 unit)
Two hours per week for one semester.
Assessment: assignments, design project and unit tests.
Reference
Class notes and other printed notes

*Laboratory Workshop Practice 1A, 1B (TA210, TA211) (1 unit)
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, glass-working, technical drawing.

Materials and Processes 1A (TF230) (1 unit)
Three hours per week for one semester.
Assessment: practical work and one major test.
Commonly used engineering materials. Practical work in mechanical testing of metals and polymers, comparative hardness testing, heat treatment of steels, precipitation hardening.

Reference

Materials and Processes 1B (TF330) (1 unit)
Three hours per week for one semester.
Assessment: practical work and one major test.
Prerequisite: Materials and Processes 1A
Corrosion and its prevention, surface hardening, flame and induction hardening, electrical materials: lubricants, timber, cement and concrete.

Reference

Mathematics 1H (IM120) (2 units)
Equations and formulae, relations and functions, trigonometry, introduction to calculus.

References
See teacher in charge

Mathematics 2H (TM220) (2 units)
Prerequisite, Mathematics 1H
Trigonometry, differentiation and integration, equations of tangents and normals, complex numbers, approximations, calculus and rates, centre of mass, centroids, parallel and perpendicular axis theorems, centre of pressure, differential equations.
References
See teacher in charge

Metallurgy 15 (2 units)
Nature of metals and types of alloys, equilibrium diagrams, solid state transformations, transformations, cold working and re-crystallisation annealing processes, iron carbon system.

References
See teacher in charge

Metallurgy 25 (2 units)
Prerequisites, Metallurgy 15
Non-equilibrium heat treatments, surface hardening processes, alloys, cast iron, non-ferrous systems, welding, corrosion and electro-metallurgy.

References
See teacher in charge

Methods of Separation (TA330) (2 units)
Three hours per week for two semesters.
Assessment: technical reports, assignments, unit tests.
Prerequisites, Chemistry 25 and Chemistry Laboratory 2
Instrumental methods applied to the separation and identification of components of mixtures. Techniques include paper, thin layer, high performance liquid, zone exclusion and gas chromatography, electrophoresis and solvent extraction.

References

Microbiology 15 (TA460) (2 units)
Three hours per week for two semesters.
Assessment: two exams, essays and assignments. Practical work. Recommended background in chemistry and biology
Theory and practice including bacteriology, virology, serology, fungi and protozoa.

References
See teacher in charge

Microbiology 25 (TA461) (2 units)
Three hours per week for two semesters.
Assessment: two exams, essays and assignments, practical work
Prerequisites, Microbiology 15
Theory and practice including bacteriology, immunology and virology as major topics.

References
See teacher in charge

Microscopy and Scientific Photography (TA457) (2 units)
Microscopy — Three hours per week for one term (term 1).
Assessment: assignments, practical work and a final test.
Theory and practice of microscopy, optics, illumination, sample preparation, magnification, resolution.

Reference

Scientific photography — Three hours per week for two terms.
Assessment: assignments, practical work and oral test.
Theory and practice of basic photography, film processing, densitometry, light, colour, optics, cameras, lenses, films, filters, artificial light sources, lighting techniques, backgrounds, photomacrography, mounting and finishing.

References
See teacher in charge

Oil and Polymer Chemistry (TA332) (1 unit)
Three hours per week for one semester.
Assessment: tests and assignments.
Prerequisite, Organic Chemistry 1
Development of the petroleum industry. Extensive study of the more important petroleum-derived products, with special reference to oils and polymers and their industrial applications.

References
See teacher in charge

Optical Methods (TA430) (1 unit)
Three hours per week for two semesters.
Assessment: tests, assignments and practical work
Prerequisites, Chemistry 25 and Chemistry Laboratory Techniques
Principles and practice of UV/visible, atomic absorption and infra-red spectrophotometry; mass spectrometry and nuclear magnetic resonance as applied to instrumental methods of analysis.

References
Willard, H.H., Merril, L.L. and Dean, J.A. Instrumental Methods of Analysis. 5th edn, N.Y., Van Nostrand, 1974

Organic Chemistry 1 (TA331) (1 unit)
Three hours per week for one semester.
Assessment: based on unit tests, assignments and practical work.
Prerequisite, Chemistry 25 and Chemistry Laboratory Techniques
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

Physics Laboratory Techniques 1 and 2 (TA122, TA222) (1 unit each)
Three hours per week for two semesters. Each.
Assessment: unit tests and assignments.
Prerequisite, Physics 15
Course of theoretical physics at post year 11 standard. Measurement and dimensions, geometric optics, linear mechanics and rotational dynamics, hydrostatics, heat and electrostatics.

References
Class notes.

Physics 25 (TA221) (1 unit)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Prerequisite, Physics 15
Course of theoretical physics at post year 12 standard. Wave motion, thermodynamics, electro-magnetism, AC and DC circuits, properties of matter.

References

Physics 35 (TA459) (1 unit)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Prerequisite, Physics 25
Theory and technique exercises including physical optics, atomic and nuclear physics, acoustics — properties of matter.

Reference

Polymer Science (2 units)
Prerequisites, Chemistry 25 and Chemistry Laboratory Techniques
Theory and practice of mechanisms of polymerisation, structure and properties of polymers, classification of polymers, additives, mechanisms of deformation, forming and working.

References
See teacher in charge

Quality Control (TA452) (1 unit)
Two hours per week for one semester.
Assessment: tests and assignment work.
Statistical methods — correlation, randomness, abbreviation of statistical testing — sign test, run test, rank test. Control charts and defect analysis. Sample schemes, process capability. For references used, see teacher in charge.
Radioactive Methods (TA456) (1 unit)
Three hours per week for one semester.
Assessment: assignments, test and practical work.
Prerequisites: Chemistry 25 and Chemistry Laboratory Techniques 2.
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.

Statistics (TA144) (1 unit) Duration 2 hours.
Two hours per week — evening only, one semester.
Assessment: consists of two two-hour exams and two assignments.
Prerequisites: Computations
Theoretical approach and simple applications of statistical methods to design of experiments and various techniques of quality control in industry, including randomisation of sampling.
References

Technician Calculus (1 unit) Duration 2 hours
Prerequisite: Computations
Introduction to techniques of integration and differentiation, with applications to chemical equations.
References
See teacher in charge

Technology and Society (2 units) Duration 2 hours
The ideas and opportunities implicit in new technologies and the problems and possibilities associated with them.
References
See teacher in charge

Typing (2 units) Duration 2 hours
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.
Assessment: see teacher in charge.
Prerequisites: Physics 25 and Physics Laboratory Techniques 2.
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, analytical techniques, detectors; use of hand-torch in vacuum line fabrication.
References
See teacher in charge

Compensatory Education and Bridging courses

Bridging courses

Bridging Mathematics (TM190)
The class is conducted throughout the year as a self-paced course of study to meet a wide variety of individual needs. It may be that you require additional mathematics to prepare for further courses of study such as certificates of technology, TOP or tertiary, or maybe mathematics just for interest. Enquiries 819 8806, 819 8378.

Bridging Science (TM194)
A flexible study program is offered for students who have left secondary schools and who wish to take preparatory science-based studies at approximately post year 10 standard. Enquiries 819 0376.

Reading Writing and Study Skills (TH070)
The course can be used to gain feedback on preparedness for further study. It is usually taken over a term and involves one evening per week. The short course has been used as a basis for mature-age entrance into universities and colleges of advanced education. Enquiries 819 8370, 819 8816.

Compensatory Education Courses

English Workshop (TR101)
The six-week course, two hours per week, gives people who wish to improve their basic English skills an opportunity to work in an informal small group situation. Enquiries 819 8816.

Individual Learning (Numeracy and Literacy) (TR102)
A flexible program which gives people who wish to improve their basic or more advanced mathematical and/or English skills an opportunity to work individually in an informal learning situation. Enquiries 819 8806.

Volunteer Tutor Training (TR100)
Courses are conducted throughout the year to train people in the community who wish to work as volunteer tutors in basic literacy. Enquiries 819 8816.