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.
<table>
<thead>
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<th>Building</th>
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<td>Hawthorn Town Hall</td>
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<td>Accountancy</td>
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<td>Art building (AR)</td>
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<td>Biochemistry</td>
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<td>Centre for urban studies</td>
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<td>W (1-5)</td>
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<td>Contact (student centre)</td>
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<td>Data processing and quantitative methods</td>
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<td>Film and television</td>
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<td>(523 Burwood Rd)</td>
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<tr>
<td>Production engineering</td>
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<td>Project office (plumbing and mechanical services)</td>
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<td>Student union office</td>
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<td>3SW student radio station</td>
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<tr>
<td>Welding — (523 Burwood Rd)</td>
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swinburne
handbook '82
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Swinburne Institute of Technology
and
Swinburne Technical College
John St., Hawthorn, Victoria 3122
Australia
Telex Swibnb AA37769
P.O. Box 218 Hawthorn 3122, Tel: 819 8911
Cables and telegrams, 'Swinburne' Melbourne

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 general table of contents indicates, in conjunction with the tabbed section fly leaves, both the contents of an individual book and the location, in that book, of the individual sections.
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<td>applied science</td>
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<td>building division</td>
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<td>engineering division</td>
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<td>division</td>
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</table>
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. 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 1981 were 2,418 full-time and 2,924 part-time students.

Swinburne Technical College — a technical and further education college, offering courses at middle-level or para-professional, trade, technical and Tertiary Orientation Program levels. A number of specialist courses are provided also, for industry and the community. Enrolments in 1981 were 851 full-time and 4,244 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, 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 Swinburn(e) and soon the county reverted to the crown of England.

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

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

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

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

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

**Swinburne Council**

Membership as at 31 August 1981

**President**
B.R. Martin, BMetE

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

**Members**

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
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<tr>
<td>W.R.S. Briggs, Ph.D.</td>
<td>BSc(Hons), DipChemEng, ASTC, ARACI</td>
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<tr>
<td>W.P. Brown, DipCE, FICE, FIEAust, FIArb, MConsEAust</td>
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<tr>
<td>K.H. Clarke, MSc, ARCS, FInstP, FAP, FAPSM, MIBME</td>
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<tr>
<td>R.S. Davie, BE(Mech), CEng, FIProdE, FIEAust, MACE</td>
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<td>Nicole Davis (1)</td>
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<td>G.W. Fary</td>
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<td>M.J. Finnerty, TTrC, DipTT, CofWCert, MBPOS (3)</td>
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<td>L.M. Jenkins, BCom, DipEd, FASA, MACE</td>
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<td>W.R. Longworth, PhD, MSc, CChem, FRSC, FRACI, FACE</td>
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<td>B.J. McDonald, BEc, DipEd (5)</td>
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<td>M. Marcou (1)</td>
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<td>K.A. May, BE(Mech), BSc, GradEAust (3)</td>
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<td>R.N. Morse, AO, BSc, BE, FIEAust</td>
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<td>L.E.A. Orton, MArch, DipArch(DSN), LFRAIA, RIBA</td>
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<td>T. Rosauer, BArch, FRAIA, RIBA (2)</td>
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<td>M.A. Rose, DipCE, BE, MIEAust</td>
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<td>A.P. Stark, DipMechE, TTTC, MIEAust</td>
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<td>J.A. Wunderlich, MSc, Dr ès Sc (Paris), ARACI</td>
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**Chief Executive Officer**
W.R. Longworth, PhD, MSc, CChem, FRSC, FRACI, FACE

**Secretary**
F.G. Bannon, BCom, FASA, 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, MSc, PhD, CChem, FRSC, FRACI, FACE

Assistant Directors
R.S. Davie, BE, CEng, FIProdE, FIEAust, MACE
L.M. Jenkins, BCom, DipEd, FASA, MACE

Principal, Swinburne Technical College
A.P. Stark, DipMech E, TITTC, MIEAust

Vice-Principal, Swinburne Technical College
B.J. MacDonalid, 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, ARACl

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

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. Collin, PhD, MEngSc, BMetE, ASMB, FIEAust, AAlP

Head, Building Division STC
G.A. Martin, BA, BEd, MMS, MIE, MAIB

Head, Business Division STC
P.C. Quail, BEd, DipEd, ASA(prov)

Head, Engineering Division STC
M.M. Katz, BEng(Mech), BEd, DipMechEng, CertElecEng, TITTC, ARMlT, MIEAust, MAIRAH

Head, General Studies Division STC
G.A. Harrison, BSc, DipMechE, TITTC

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

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

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

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

Industrial Liaison Officer
F.A.M. Lees, B MechE, FIEAust, FLICA

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)
Ian 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, TITTC, DTSC

Paymaster
D.T. Coutts

Registrar's office

Registrar
G.L. Williamson, BSc

Assistant Registrar
R.T. Dawe, BA, LLB

Administrative Officers
L. Scheuch-Evans, BS in Foreign Service
Helen Ralston, BCom

Information Officer
W.D. Barker

Staff Officer
Alison L. Dews, ARMlT

Correspondence Registry
Elizabeth A. Black

Admissions and Examinations Officer
M.J. Foley

Faculty Secretaries
Applied Science
J.S. Ure, BSc, DTA

Arts
Elizabeth A. Williams, BA, DipCrim

Business
Valerie Stiles, BA

Engineering
A.J. Miles, BEd

Swinburne Technical College office

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

Assistant Accountant
N.J. Sutton

Assistant Registrar
Geraldine E. Emerson, Bjuris, LLB (on leave)
Membership of Academic Board

As at 31 August 1981

Ex officio

Chairman
Dr W.R. Longworth (Director)

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

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

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Mr T. Burke — Social and Political Studies
Mr R.A. Francis — Graphic Design
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Mr M.A. Howe — Psychology
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Mr H.J. Kannegiesser — Humanities
Mr R.P. Kavanagh — Mathematics
Dr I.G. McWilliam — Applied Chemistry (representing)
Mr B.N. Nicholls — Economics
Mr S.J. Rackham — Physics
Mr B.C. Robinson — Film and Television
Mr J.K. Russel — Manufacturing Engineering
Mr R.B. Sandile — Civil Engineering
Mr P.F. Thompson — Liberal Studies
Mr R.W. Treloar — 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.G. Bannon

Registrar
Mr G.L. Williamson

Swinburne Librarian
Mr W. Linklater

Co-ordinator, Student Health and Welfare
Miss Mary Algar

Head, Education Unit
Mr B. Hawkins

Representative, Technical College
Mr A.P. Stark

Representatives, Board of Studies STC (2)
Mr P.C. Quail
Mr G.N. Williams

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

President, Student Union
Mr A. Mahar

Elected members

Faculty of Applied Science (6)
Mr R.A. Evans
Dr J.M.P. Fitzgerald
Dr I.K. Jones
Mr R.L. Laslett
Mr E.D. McKenzie
Mr T.G. Peache

Faculty of Art (2)
Mr G. Dance
Mr A.M. Evans

Faculty of Arts (4)
Mr P. Fleming
Mr P.C. Kent
Mr D.Y. Mayer
Mr J.P. McLennan

Faculty of Business (5)
Mr D.G. Adams
Mr D.V. Hawkins
Mr W.C. Nash
Mrs Sheila Rodeck
Mr H. Zimmerman

Faculty of Engineering (8)
Mr F.H. Allen
Mr I.B. Chapman
Dr I.J. Freshwater
Mr G.N.M. Gaunt
Mr B.J. Hird
Mr M. Midj
Mr I.R. Palmer
Mr C.F. Tenniswood

General representatives
Mr J.K. Currey
Mr K.R. Horrigan
Miss Susan Kelly
Mr W.J.P. Lavery

Members in a personal capacity
Dr G.E. Mapstone
Mr P.D. Stewart
Mr R.S. Walker

Student members
Mr P.W.S. Bain
Mr B.J. Daniels
Mr M. Graham
Mr M. Kiernan
Mr C.L. Miles
Membership of Board of Studies

As at 31 August 1981

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 — Engineering

Heads of Teaching Departments
Mrs Dorothy L. Bennett
Mr E.A. Trotter (Acting)
Mr F.L. Smyth
Mr R.Gullan — Business Studies
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 Pamela Caven
Mr N.J. McBride

Tertiary representatives
Mr A.P. Gardner

Head, Education Unit
Mr B. Hawkins

Co-ordinator, Student Health and Welfare Unit
Miss Mary Algar

Education Services Co-ordinator
Dr Lynna J. Ausburn

Library

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

Acquisitions
Merna F. Mattsson, BA, AssocDipLib, ALAA
Meredith R. Barnes, BA, GradDipLib

Audio-visual
Dianne Zakis, AssocDipLib
Marguerite Hawkins

Cataloguing
K.M. Villmowck, BA, ALAA
Wendy Martin, BA
June E. Fizelle, BA[Honours], ALAA
S.K. Hall, FRMIT(ElecEng), GradDipLib, GradDipEDP, ALAA
Christina R. Haskin, BA
Helen L. Pitt, BA, AssocDipLib,
Janet Farmer, BA[Honours], GradDipLib, ALAA
Denise R. Ethell

Periodicals
Kath M. McGrath, BA, GradDipLib, ALAA
Jenny A. Loh, BSc, GradDipLib

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

Circulation
Barbara J. Nichol, BSocSci(Lib’ship)

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

Reference
I.A. Douglas, BA, MSc

Reference and reader education
Pat M. Pettit, MA, GradDipLib, GradDipEd
Barbara A. Camfield, BA, AssocDipLib
Janet M. Lindner, BSocSci(Lib’ship), DipLibInfSci, ALAA
Julie M. Ager, BA, DipLib
Vicki K. Randell, BSc, DipLib
Karola A. Deeholts, DipLib

Vanessa Seymour

The central 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 184,022 items. In addition, 3,225 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 8.45am to 10.00pm
Show Day 2.00pm to 10.00pm
Cup Day 8.45am to 10.00pm
Closed on all other public holidays.

During vacations
Mid-semester breaks:
Monday to Thursday inclusive — 9.00am to 2.00pm
Friday — 9.00am to 10.00pm

Long vacation
Monday to Friday
9.00am to 5.00pm

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.

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
First day: $0.50 per hour late. For each day thereafter: a further $1.25 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
First day: $0.50 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
First day: $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 Librarian. 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, Level 2, Library otherwise the library can take no responsibility for items borrowed on that card. These are not transferable and are valid only when signed. A current card must be produced when borrowing otherwise service may be refused. Lost or damaged cards may be replaced at the Student Records Office at a cost of $1.00.

General Information
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 area 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
Mary Algar, BA(HonsPsych), DipSocStud, MAPsS

Counselling
Mary Algar, BA(HonsPsych), DipSocStud, MAPsS
Jane McGillivray, BBSc(Hons), MPsych
Monica Manton, BA(HonsPsych), MAPsS
Kristina Olsen, BA, DipSocStud
Margaret Rae
Catherine McClurkin

Counselling information
Sarah Bulleid, BA(Hons)

Employment and housing
G.N. May, BCom, BEd, TTC
Penny Warner, BBSc, GDipSecStud
Jenny Ralph

Health
G. Hudson, MB, BS, FRACGP
Janet Fischer, SPN, SRM
Linden Brazier, SRN, SRM

Chaplaincy
W. Hamilton, BA, DipTheol
B. Caulfield-James, SJ, BA, BEd

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 chaplains are not formally a part of the unit, they work 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, voluntary and strictly confidential.

Counselling is concerned with helping people, individually and in groups, with personal problems, vocational and career decision 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, 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.
General Information

Student health
Location: room 207, level 2, BA building
Telephone: 819 8483
The health service is available to all students and to staff for 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; the office 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.

Swinburne chaplains
Location: room 206a, level 2, BA building
Telephones: 819 8489, 819 3699, 541 3162
The chaplains are not employed by Swinburne but have a wide responsibility to students and staff regardless of religious affiliation or lack of it.

The chaplains are available for confidential counselling but most of their work is done through informal contact with students and staff. They are involved in the community life of the institute and take part in student activities, giving help and support or advice if needed. They also organise 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.

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
Students or staff who are permanently or temporarily handicapped in any way and have difficulty with access to teaching buildings, the library, use of lifts, telephones, cafeteria, etc., should contact Catherine McClurkin in the Student Counselling Service, level 2, BA building, or telephone 819 8025.
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
- Swinburne Council Fund for Preliminary Year Students
- Student Aid Fund
- Student Union Aid 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 1982 the following benefits are available subject to a means test:

- **Maximum living allowance**
  - for dependent students at home: $1,675 p.a.
  - for dependent students away from home: $2,583 p.a.
  - for independent students: $2,583 p.a.
  - allowance for dependent spouse: $2,220 p.a.
  - allowance for dependent child: $520 p.a.

- **Incidentals allowance**
  - Institute 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 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.

National Employment and Training Scheme (NEAT)
Under this scheme, the Commonwealth government retraining 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.

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 in the 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.

Conveyance allowance and fare concessions

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 apply for a conveyance allowance provided there is no other technical college or tertiary institute nearer their home than Swinburne which provides a course of study comparable to that required by the student. Distances are calculated on a radial basis on a map supplied by the Education Department, a copy of which can be viewed at the Accounts Office at 66 Park Street for Swinburne Technical College students or at the Student Records Office in the Institute Administration building.

Students not attending the college or institute nearest to their home may receive an allowance if:

(a) they applied for and were refused admittance to the college or institute nearer to their homes, and they can produce documentary evidence to this effect;
(b) they can maintain that it is cheaper and easier to travel to Swinburne.

Students who think they may be eligible for a conveyance allowance should enquire at the Technical College Accounts Office or the Institute Student Records Office before 1 March 1982. All application forms must be returned to these offices before 31 March 1982.

Applicants should take advantage of concessions in fares since full-time students travelling by rail or tram will be paid only the cost of special concession tickets. Wherever practicable, students must avail themselves of rail transport.

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 of 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.
Scholarships and awards

Some of these are general awards and others are available only to Swinburne students. Details of these and other awards may be obtained from the Student Counselling Service and teaching departments.

**Dafydd Lewis Trust Scholarship**
This is available to male students who will be proceeding with degree level study in 1982; this is subject to a means test and certain conditions of eligibility. Value: $46 to $65 p.w. 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: $350 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 1939-145 war, or to their direct descendants. There are (a) postgraduate research scholarships; value: approximately $2000 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 $24-$90 per fortnight.

**Rotary Educational and Vocational Scholarships for Overseas Study**
These are available to outstanding graduates, undergraduates, teachers 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

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.

**Manager**
Mr Guy Nettleship, CEng, MIMarE, 819 8326.

Child-care Centre

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 other members of the community. A sliding scale of fees is in existence.

**Supervisor**
Mrs Sheralyn Campbell, 819 8519

College Press

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.

**Manager**
Mr David McNaughton, 819 8123
The Swinburne Computer Centre provides computing and data processing facilities for teaching, research and administrative applications. In 1982 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 M160F and the PDP-11/40 configurations. The M160F, installed in 1980 is configured with 200 megabytes of disc storage, two communications processors, a printer, card reader and two tape drives. Real memory of the central processor is six megabytes. The system supports an extensive terminal network with VDU’s and hard copy devices distributed through the Arts, Business, Applied Science and Engineering faculties. Batch or interactive access to a large range of programming languages (including BASIC, FORTRAN, COBOL, RPG, LISP, APL and PASCAL) and software packages (including SPSS, SAS, IMSL, SIBYLRUNNER, NAG, ESP, CUSC, SSSLⅡ, FNAP and RECONF) 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 i/o 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 departments 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 H207 and later collect output from there. Similarly any listings initiated by terminal users, which are produced centrally can be collected from H208.

The I/O Centre is open during semesters from:
- 9.00am to 7.30pm Monday, Tuesday and Wednesday
- 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, the Centre conducts seminars specifically designed to ensure that teaching staff and students use the computing facilities in an efficient and co-ordinated manner. The Centre’s main publication is a User’s Guide, which is supplemented throughout the year by a number of bulletins.

Education Unit

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

Audio-visual services

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

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

Head, Education Unit
Mr Bernard Hawkins, BA, MEd, DipEd, MACE, 819 8384

Education Officer (educational technology)
Mr Keith Anderson, MA, BSc, DipEE, MIEAust, MACE, TTTC, 819 8384.

Education Services Co-ordinator
Lynna Ausburn, PhD, MA, BSc, SecTechCert, MACE, AECT, 819 8355.

Audio-visual Officer-in-charge
Mr David McAdam, BA, 819 8010

General enquiries 819 8031

Information Office

The Information Office is responsible for all aspects of public relations activities, including internal and external communications, visitors’ days, visits to Swinburne by schools and other groups, media liaison and advertising.

Information Officer
Mr Warren Barker, 819 8460

General enquiries 819 8444
Student parking
Limited car parking facilities are provided for all part-time and full-time students. No charge is made, but a 1982 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.

General enquiries
Mrs Diane Janichen, 819 8382
Student enquiries
Student Union, 819 8520

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 Jeannette Learnmont, 819 8816

Swinburne Applied Research and Development Division (SARDD)
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.
Executive Officer
Mr Frank Lees, BMechE, 819 8001

Swinburne Student Bookshop Co-operative Limited
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.
To be eligible for discount benefits, students must buy a one dollar share from the Co-operative to become a registered shareholder.
All students are advised to join the Co-operative to ensure that the Student Bookshops can continue to provide cheaper books and articles for student use.
Manager
Mr Rolf Wilkens, 819 8225
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.

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.

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, motorkhans, hill-climbs, sprints, films and social evenings.

**Cricket**
- Regular interfaculty and student/staff matches.

**Gymnasium**
- A new weight-training gymnasium which is well equipped, catering for both men and women; regular classes will be held.

**Field and game**
- Regular hunting trips and indoor and clay target shooting.

**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. Equipment available for hire.

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

**Snow skiing**
- Midweek and weekend trips to Hotham, Bullyer 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**
- The club has its own boat and equipment and goes on numerous trips during holidays and weekends.

**Additional facilities**

In addition to the above, the Sports Association subsidises ten pin bowling, golf and ice skating at local commercial enterprises. 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

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
- Italian and other major studies
- Japanese and other major studies
- Media Studies and other major studies
- Political Studies and other major studies
- Psychology and other major studies
- Sociology and other major studies

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)
- Applied Chemistry
- Biochemistry
- Environmental Health

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

Diploma of Building Surveying

Associate diplomas
Associate Diploma in Private Secretarial Practice
(AssocDipPSP)

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
- Italian
- Japanese
- Maintenance Engineering
- Management Systems
- Manufacturing Technology
- Organisation Behaviour
- Scientific Instrumentation
- Telecommunication Systems
- Management
- Transportation Systems
- Urban Sociology
- Urban Systems

*Awaiting approval
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 1 subjects.
   In general, recent school leavers should have achieved Grade D or higher in four Group 1 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 exists 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), 11 Queens Road, Melbourne, 3004.
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 1982 Students'.

Form E
For all other applicants, copies of the form, and the 'Guide for Prospective 1982 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 1981; who completed their Year 11 studies at an eastern metropolitan region technical school in 1980 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:
- Applied Science 15 January 1982
- Art 20 November 1981
- Arts* 27 November 1981
- Business 15 January 1982
- Engineering* 15 January 1982
*Further applications will be received after this date if places are available.

Part-time
Part-time courses are offered in all faculties except Art
All applications for part-time courses must be made directly to Swinburne. Forms are obtainable from the Admissions Officer, 819 8386.
Closing dates for part-time places should be received by:
- Applied Science 15 January 1982
- Arts* 27 November 1981
- Business 15 January 1982
- Engineering 15 January 1982
*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. Application5 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 1982 may apply for a deferment until 1983. 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 or 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:

- Applied Science: 15 January 1982
- Art: 20 November 1981
- Urban Sociology: 27 November 1981
- Business: 15 January 1982
- Engineering: 15 January 1982

*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 1 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 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.

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 compliance 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 payment of the prescribed general service fee;

the lodgement of all documentation (required by the Registrar at the Cashier’s Office or the Student Records Office as appropriate to the procedure being followed.

Fees

Tuition fees are payable by students who are enrolling for the first time in 1982 for a second or higher qualification. The fees payable are as follows:

Second bachelor degree Unknown at time of printing
Degree of Master $1,000 per annum not to exceed $2,000 for the full course; pro rata for student undertaking the course by part-time study
Graduate Diploma unknown at time of printing

In addition, all enrolling students are required to pay a general service fee. At the time of printing, fees for 1982 had not been determined. As a guide those for 1981 were:

Full-time students more than one semester academic $51.00
Full-time students at least one semester work experience $35.00
Part-time students $22.00

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

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

Applied Science degree 2nd and 3rd years
Applied Science diploma (Environmental Health) 2nd and 3rd years
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 preiersence, 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, 1982.
No later VUAC offer
A student who withdraws and does not receive a higher preference offer from VUAC may receive a refund of fees, less a $5.00 service charge, if notice of the withdrawal is lodged at the Student Records Office, administration building, prior to 31 March 1982.

No refunds of fees will be made where a student withdraws from study after 31 March 1982.

No refunds of fees will be made under any of the provisions set out above unless the student returns to the Student Records Office, with the notice of withdrawal, his or her 1982 student identity card.

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

Students are therefore advised 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 (includes notice of withdrawal from all study)

Procedure
Amendments to course or subject can be made only on the Amendment to enrolment form available from the Student Records Office or the appropriate Faculty Secretary.

A student may withdraw from a subject or from his or her course without penalty of failure:

- for a subject which concludes at the end of the first semester — not later than Friday 16 April 1982
- for a subject which concludes at the end of the second semester — not later than Friday 17 September 1982

Withdrawal after that date will result in a failing result being recorded, unless special circumstances exist and the Registrar, on the advice of the dean of the appropriate faculty, so approves.

No student may withdraw from any subject or course of study after:

- for the first semester, Friday 4 June 1982
- for the second semester, Friday 29 October 1982

except where special circumstances exist and the particular amendment to enrolment is approved both by the dean of the faculty concerned and the Registrar and a processing fee of $20.00 per subject involved has been paid.

No subject may be added to a student's enrolment without the approval of the head of the awarding department (or nominee).

Any addition of a subject after 16 April 1982 (first semester) and 17 September 1982 (second semester) will be permitted only where special circumstances exist and the amendment is approved by the dean of the appropriate faculty and the Registrar and a processing fee of $20.00 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 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) in addition to completing an Amendment to personal details form.

Identity cards
All students enrolling or re-enrolled at the institute will be issued with a 1982 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 the 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 Student Records Office Administration 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 Student Records Office.
Assessment regulations

These regulations, a consolidation of three formerly separate documents, were approved by the Academic Board on 26 November 1980.

Preamble

The purpose of these regulations is to safeguard academic standards, to ensure that assessment relates to the objectives and content of the course taught, to enable students to have a 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 strongly recommends that the staff be familiar with the relevant literature in the area of educational assessment.

What follows has been divided into major sections:

(1) definitions;
(2) the objectives of assessment;
(3) determining the forms of assessment and moderating assessment activities;
(4) the student and the conduct on assessment:
   — candidature
   — formal examinations
   — provisions for students who have been disadvantaged
   — publication of results
   — withholding result certification
   — grievance and appeal
   — special faculty provisions
(5) processing results:
   — the assignment of grades
   — documenting and formalising results
   — special cases: the administrative result categories
   — retention of assessed work

The regulations contained in sections 2 and 4 shall apply to all subjects within courses of study taught within the Swinburne Institute of Technology after a date to be determined.

1. Definitions

Chief Examiner

The Chief Examiner is the Director for the time being of the Institute. Duties of Chief Examiner have been, for the time being delegated to the Assistant Directors.

2. The objectives of assessment

2.1 For the purposes of these regulations the main functions of assessment are seen to be:

2.1.1 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 ‘feedback’, that is, to let the student know, as soon as possible after they are discerned, any specific errors, misunderstandings and shortcomings, and then to assist in overcoming them.

2.1.2 The certification to the community that students have satisfactorily completed certain subjects and/or courses at Swinburne Institute of Technology.

2.1.3 Assistance with the evaluation and review of course content and objectives.

2.1.4 Assistance with the evaluation and review of methods of instruction.

2.2 Although sections 2 to 4 of this document concentrate chiefly on the certification aspect of assessment, the Academic Board considers that the three other functions of assessment stated in 2.1 above are of even greater importance in the educative process.

2.3 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, or the evaluation of course content, course objectives, and methods of instruction, as these matters are the prerogative of each faculty.

3. Determining the forms of assessment and moderating assessment activities

3.1 Each headchairman of department, in consultation with senior academic staff, shall set up at the beginning of each academic year an assessment panel for each subject (the ‘subject panel’).

3.2 Each subject panel shall consist of at least two members, one of whom shall be appointed as convener. The convener will normally be the lecturer in charge of the subject. It is the duty of the convener to ensure that the assessment procedure for that subject is adequately carried out.

3.3 The headchairman of department shall report to the appropriate faculty board before 1 April each year concerning the proposed membership of each subject panel.

3.4 The convener of each subject panel shall, inter alia, be responsible for seeing that panel members are familiar with the content and objectives of the subject.

3.5 After consultation with the headchairman of the department, the panel shall determine the forms of assessment to be used in that subject, taking care to ensure that the four functions of assessment stated above — facilitation of learning, certification, evaluation of course content and objectives, evaluation of methods of instruction — are adequately covered.

3.6 In the case of examinations and tests, the convener must supervise the allocation of questions and ensure that the paper is properly balanced. Where appropriate, each examination or test paper shall be provided with written solutions or a statement of minimum quality. In such cases, the panel must be in agreement with the solutions or statement. The panel must also be in agreement with any assignments set as part of the assessment procedure.

3.7 The panel shall inform students of the details of the form and weighting of assessment procedure as early in the semester as possible.
The panel, having consulted with the head of department, will determine which assessment categories shall be used in issuing results in the subject. They may assign the normal graded categories or elect to issue pass/fail results only. Section 5.1.2 of the document gives details of the approved assessment categories. The categories having been determined; the convener must advise the Registrar in writing:

(a) in the case of subjects for which a final result is determined at the end of semester 1 of any year — whenever those results may actually be published — by 1 May of that year;

(b) in the case of subjects for which a final result is determined at the end of semester 2 of any year — by 1 September of that year.

The convener shall arrange for appropriate proof-reading and checking of examinations, tests, and assignments before they are presented to students.

In the case of continuous assessment, the convener must ensure that a register of results of assigned work is properly kept.

Conveners of subject panels or their nominees must be present in the examination room at the beginning of each examination for which they are responsible to answer any questions which may arise regarding the subject matter. Staff should be readily available during the remaining period of the paper.

Where a test or formal examination is held, the convener is responsible for distributing the scripts for marking and arranging for raw marks to be calculated and recorded.

4. The student and the conduct of assessment

4.1 Candidature

4.1.1 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). Students must therefore check the accuracy of their enrolment details prior to the end of the seventh week of each semester (see also ‘Confirmation of Institute records’ in the Enrolment regulations). No result can be given in a subject for which the student is not formally enrolled.

4.1.2 A student who withdraws from a subject later than nine weeks prior to the commencement of the examination period for 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 head/chairman of the awarding department.

4.1.3 Students should make themselves aware of the methods of assessment adopted for the subjects they undertake; enquiries should be directed to the convener of the appropriate subject panel.

4.1.4 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 the basis for requiring a student to pay a fee in order to sit for an examination; or

(c) as a prerequisite to that student obtaining a passing grade in that subject;

provided that it always be clearly within the power and responsibility of a department to lay down minimum standards of work which a student must reach in order to be notified to a faculty board as a pass in the subject.

4.2 Formal examinations

4.2.1 Approximately half-way through each semester a provisional time-table for examinations to be held during the designated period will be posted on the notice board in the quadrangle. Students should take note of their examination times and report any clashes immediately to the Examinations Officer.

The final examination time-table will be posted on the notice board in the quadrangle approximately two weeks prior to the beginning of the examinations.

It is the responsibility of students to find out dates and times of examinations. No information will be given over the telephone.

4.2.2 Conduct of examinations

Unless otherwise stated on the time-table, morning examinations will commence at 8.50 am and afternoon examinations at 1.20 pm. Students will not be permitted to enter the examination room after 30 minutes have elapsed from the commencement of the examination, and will not be permitted to leave until 30 minutes have elapsed from the commencement of the examination nor during the last 15 minutes of the examination period.

At the end of the examination students are required to remain seated until the room supervisor has collected all scripts and institute material. Students are required to provide their own slide rules, and drawing instruments.

Unless expressly prohibited, electronic calculators may be used. Such calculators must be battery-operated. Students will not be permitted to borrow or lend calculators during an examination.

Conveners of subject panels may ask that room supervisors ensure they mark ‘calculators used’ on examinations scripts. Conveners may also place a restriction on the level of sophistication of calculators to be used.

Conveners of subject panels must be present in the examination room at the beginning of each examination for which they are responsible to answer any questions which may arise regarding the subject matter. Staff should be readily available during the remaining period of the paper.
4.2.3 Examination discipline

When an apparent case of cheating or other irregularity is detected in an examination room, the student will be informed immediately by the supervisor but will be permitted to finish the examination. The examinations officer will immediately report the circumstances to the appropriate Assistant Director, the subject convenor, the head(s) of the appropriate teaching and awarding department.

At the conclusion of the examination the Assistant Director will decide whether or not there has been an irregularity. If there has he shall convene a meeting of the people listed in the paragraph above to decide whether any penalty shall be imposed upon the student.

A student who suffers a penalty in this way shall have the right of appeal to a committee appointed for the purpose by the Director.

The committee shall include at least one student. The Assistant Director (or a nominee who has been a party to the investigation), subject convenor, or head of department shall be ineligible to sit on the appeal committee.

4.2.4 Absence from examinations

Students who are absent from an examination in whole or part due to illness or other misadventure may apply for a special examination. See section 4.3.2 for details.

4.3 Special provisions

4.3.1 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 assessment 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 with the Registrar not later than 48 hours after the conclusion of the formal examination. Where circumstances have affected performance in components of a continuous assessment program, application should be made before the end of the course of study.

No application will be considered after the publication of results. Only one application is necessary; if more than one subject is involved, the application will be copied and the appropriate departments notified.

4.3.2 Special examinations/assessments

Special examinations/assessments may be granted for one of two reasons: (refer 5.4.1.1)

- Applications should be accompanied by evidence of genuine inability to attend. The application should be lodged at the Student Records Office not later than 48 hours after the conclusion of the examination.
  - Where a student has obtained a pass category in all subjects except one for an undergraduate award and has presented for and failed that subject in the final semester. This provision will also apply retrospectively where a student has failed a subject in the penultimate semester and where this subject was not available for the student to repeat in the final semester.
  - Applications should be lodged at the Student Records Office within ten calendar days of the publication of the final semester's results. Fee $1.50.

Special examinations/assessments may be granted only by the Chief Examiner.

When a special examination/assessment has been approved, the work must be submitted by a date to be fixed by individual faculty boards, in any case, no later than two months after the date of publication of the original result (refer 5.4.1.3).

Any lengthening of the period for finalising special examinations/assessments must have the prior approval of the dean who shall fix a date by which the special examination must be held or work submitted for assessment (refer 5.4.1.4).

4.4 Publication of results

4.4.1 The Student Records Office is the only official source for the publication of results.

4.4.2 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 results.

4.4.3 No results will be given over the telephone

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

4.5 Withholding result certification

4.5.1 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 from the Swinburne library or who has failed to pay any fine or imposition relating thereto after notice to that effect had been posted to him or her by the Registrar.

4.5.2 Posting of a notice referred to in 4.5.1 shall have been deemed to have been done if such notice was posted to the most recent address in the institute records.
4.6 Grievance and appeal
Any student or group of students has the right of appeal to the head/convener of the appropriate department about any aspect of the assessment procedure in any subject.

4.7 Report on results
Any student may, on application and after the payment of the appropriate fee, be entitled to a full report on any material submitted for formal assessment and in the department's possession, provided that the application for a report is made and the appropriate fee paid not later than one calendar month after the publication of results.

Reports on examinations are available in two categories:
(a) a statement showing marks gained for each question or part of question. Fee $1.00;
(b) a detailed report by the examiner. Fee $10.00
Application may be lodged at the Cashier's desk in the Student Records Office.

4.8 Supplementary assessment
Other than the provision shown under 4.3.2, only in special circumstances will a student who fails a subject at a semester or end of year examination be given a supplementary assessment.

4.9 Special faculty provisions
4.9.1 Applied Science
The results of full-time first year students will be released only at the end of the second semester; in later years of the degree courses and in the Diploma of Applied Science (Environmental Health) results will be released at the conclusion of each semester subject. Results will be released annually for all students in the Diploma of Applied Science (Applied Chemistry) and the Diploma of Applied Science (Biochemistry).

4.9.2 Engineering
(1) The Engineering Faculty operates a scheme of block passing by years which enables engineering students to be assessed on a block of work rather than individual subjects.

Following the end-of-year exams, full-time engineering students who do not achieve pass results or better in all subjects are considered for a 'Faculty Pass' on the year's work as a whole. Students who receive poor results in only one or two subjects may be given supplementary assessments. In these cases, consideration of students' overall faculty results is deferred until the results of the supplementary assessments are available.

(2) Mid-year examinations are held in some subjects. However, as the Faculty operates a scheme of block passing by years, official results are not released until the end of the academic year.

5. Processing results
5.1 The assignment of grades
5.1.1 The convener shall, at the end of a course of study in a subject, arrange with the head/convener of department (or faculty sub-committee) for the conversion of raw marks to provisional final categories.
This shall be carried out according to the regulations shown under 5.1.2, using the particular range of categories agreed to by the panel and notified to the Registrar earlier in the semester (see 3.8).

5.1.2 Result categories
Basic assessment categories are as follows:

5.1.2.1 Pass with varying degrees of distinction:
- High distinction (HD)
- Distinction (D)
- Credit (C)
- Pass (P)
- Not pass (N)

5.1.2.2 Where it is not appropriate for a subject to be categorised as indicated above, there shall be two categories:
- Pass (P)
- Not pass (N)

If these latter categories are used, a statement shall be included in the published results to the effect that only one category of satisfactory achievement was awarded in the subjects concerned.

5.1.2.3 'Faculty Pass' may be entered on result sheets only in Engineering or Applied Science courses where block passing systems have been approved by the Academic Board.

5.1.2.4 The following result categories are applicable in special circumstances:
- Deferred (DEF)
- Continuing (CON)
- Exempt (EXM)
- Special exam approved (SPX)

Refer sections 5.4.2, 5.4.3 and 5.4.1 respectively.

5.1.3 The head/convener of department shall arrange for additional scrutiny or testing of borderline candidates and of any candidates who have submitted a valid claim for special consideration based on illness or personal hardship.
The convener shall arrange for a review of all failed candidates.

5.2 Documenting and formalising results
5.2.1 The convener shall submit the following to the head/convener of department:

5.2.1.1 The recommended results for each student enrolled for the subject;
5.2.1.2 Whatever statistical measures are required by the head/convener of department and faculty board;
5.2.1.3 A subject report in a form approved by the appropriate faculty board, signed by the convener and including:
5.4 Special cases

5.4.1 Special examinations/assessments

5.4.1.1 The Chief Examiner may grant a special examination/assessment:

(a) where a student is absent from an examination in whole or part due to illness or other misadventure; or

(b) 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, a subject which was not again available in the final semester.

Details concerning student's eligibility and application procedure are given in section 4.3.2.

5.4.12 Special examinations granted in accordance with 5.4.1.1 must be notified to faculty board at its first meeting after the granting of the special examinations.

5.4.1.3 When a special examination/assessment has been given, the work should be submitted by a date to be fixed by individual faculty boards, but, in any case, not later than two months after the date of publication of the original result.

5.4.1.4 Any lengthening of the period for finalising special examinations/assessments must have the prior approval of the dean who shall fix a date by which the special examination must be held or work submitted for assessment. Details of the extension granted shall be notified to the next meeting of the faculty board.

5.4.1.5 As soon as the result of the special examination/assessment has been determined, the head chairman of department shall submit the result on the official result sheet provided by the Student Records Office to the dean for approval and notification to the Student Records Office and the faculty board.

5.4.1.6 Where a special examination/assessment result is not notified to the Student Records Office within fourteen days of the date fixed by the provisions above, it shall be recorded as 'N'.

5.4.2 Deferred results

5.4.2.1 A student who has been assessed as 'N' shall not be permitted to submit further work, although existing work may be reassessed towards the same examination/assessment.

5.4.2.2 A deferred result may be granted only by the faculty board and then only when special circumstances call for a short extension of time (up to two months) to be granted to complete existing work before the final result for a subject is determined.

5.4.2.3 When a deferred result has been given, the work should be submitted by a date to be fixed by individual faculty boards, but in any case, no later than two months after the date of publication of the deferred result.

5.4.2.4 Any lengthening of the period of deferral must have the prior approval of the dean who shall fix a 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.

5.4.2.5 As soon as the final result has been determined, the head chairman of department shall submit an Alteration to Examination Result form to the dean for onward transmission to the faculty board. Refer to 5.3 for details of this procedure.
5.4.2.6 Where a deferred result is not finalised as set out above, it shall be converted to ‘N’ or such other default value as specified by the faculty board at the time for approval of the deferred result.

5.4.3 Continuing results

The result ‘continuing’ may be applied to those subjects in which enrolment will normally extend for more than one year and in cases where a result is determined on submission of a report or thesis, following an initial result of ‘deferred’.

The result ‘continuing’ will appear on the official examination result 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.

6. Retention of assessed work

The headchairman of department shall arrange for the retention of all assessed material in the department’s possession for a period of three calendar months after the publication of results.

At the end of this three-month period the headchairman of department shall arrange for the storage of a representative sample of assessed material for all subjects taught by the department for a further period of twenty-one calendar months.

The headchairman of department shall also arrange for the storage, for a period of two years, of all other material submitted to him by the conveners of subject panels under regulation 5.2.1.

Swinburne Centres

Centre for Applied Colloid Science

The centre was established in 1980 for the development of applied research and contract 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.

It also operates as a contact point for visiting members of staff from other academic institutions, companies or government authorities, both local and overseas.

Visitors frequently give lectures and discuss research activities which proves most advantageous to students at undergraduate and postgraduate levels as an integral part of their training.

Some of the work undertaken inevitably involves the development of equipment or processes which may be patented

Co-ordinator
Dr John Ralston, 819 8402

Swinburne Applied Behavioural Studies Centre

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.

Chairman
Mr Maurie Howe, Head, Department of Psychology 819 8203.

Science Education Centre

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.

Chairman
Mr Alec Gardner, Dean, Faculty of Applied Science, 819 8503.

Centre for Urban Studies

The Centre for Urban Studies was established at Swinburne in 1973. The management committee is composed of members of staff from several departments of the Institute. From the Centre, extension lectures, seminars and community education programs are developed; papers published and teaching materials about urban problems, distributed throughout the community.

The 1978 Certificate of Planning Achievement was awarded to the Centre, by the Town and Country Planning Association. Some of the successful fields of investigation have been in the areas of:

- urban design
- environmental impact statements
- urban renewal
- watercourse management
- housing policy

In 1981, a new venture into consultative research is being undertaken. Two of the projects are, a study of the needs of adolescents in different parts of Melbourne and a study of homeless youth in Melbourne, Sydney and North Eastern Victoria.

Secretary
Mrs Elsie Barras, 819 8825
applied science

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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, BSc(Hons), DipEd
- R.L. Laslett, MSc, DipEd, ARACI
- I.G. McWilliam, BSc, FRACI, MASIA

**Senior lecturers**
- W.L. Baker, BSc(Hons), MSc, MPS, ARACI, TTTC
- J.C. Bowater, PhD, BSc(Hons), DipEd, ARACI
- K.R. Harris, BSc, DipAppChem, ARACI, TTTC
- P.J. Havlisek, MSc, TTTT, ARACI
- G.L. Hill, MAppSc, DipAppChem, ARACI, MACE, TTTC
- T.H. Randle, MSc, BEd, ARACI

**Lecturers**
- E.F. Carter, BA, MSc, DipEd
- R.F. Cross, PhD, BSc(Hons), DipEd, ARACI
- J.V. Culka, PhD, BSc(Hons)
- J.M. FitzGerald, PhD, BSc(Hons)
- L.J. Michel, PhD, BSc(Hons), DipEd, ARACI
- L.Y. Misconi, PhD, MSc, DIC
- R.G. Morris, DipPhD, MAIHS
- M. Natarajan, PhD, MSc.

**Senior demonstrators**
- Barbara Buchanan, BSc, TSTC
- Elizabeth Durre, BSc, DipEd

**Instructor**
P.J. Kelly

### Department of Computer Studies

**Head**
C.A.K. Hunt, BA, DipAppChem, MBCS

**Lecturers**
- J.R. Alonso, MSc, GMICHEM, ARACI, AIChE, ACS, MIEAust, EIT, PE
- G.P. Martin, PhD, MSc, MIEE, MACS
- J.M. Smith, BSc(Hons), DipEd, MAV

**Senior tutor**
P. Reid, BEng

### Department of Mathematics

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

**Principal lecturers**
- A.K. Easton, PhD, MSc, DipT, FIMA
- P.A. Evans, MSc, DipEd, MASOR
- J.R. Iacono, MSc, BA, TPTC

**Senior lecturers**
- N. Garnham, MSc, DipEd
- P.H. Green, BA
- W. O’Dell, BA, DipEd, MASOR, MESS
- J.F. Pidgeon, BA, DipEd
- C. Scott, MEd, BA, BSc, ATII(Cert)
- H.V. Yee, BA, TPTC

**Lecturers**
- C.R. Barling, MSc, DipEd
- S.R. Clarke, BSc(Hons), MA, DipEd
- E.P. Hausler, MSc, DipEE, TTTT
- J.C. Herzel, PhD, MSc, BA, AAIP
- 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)
- K.G. Williams, MSc, MASOR

**Senior tutors**
- Glenda Francis, BSc(Hons)
- J. Yearwood, MSc

### Department of Physics

**Head**
S.J. Rackham, MSc, BEd, FRMTC, FAIP, TTTC

**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. Laidle, BSc(Hons), DipEd, MAIP
- J.M. Venema, BSc, BA, TTTT, DipEd
- D. Ward-Smith, PhD, BSc(Hons), MAIP
- A.W. Wood, PhD, MSc

**Senior demonstrator**
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)

The diploma courses are available for part-time study only and are of a minimum of six years' duration. Classes are offered mainly in the evening. The diploma subjects may not all be offered in any one year, their availability being determined by student requirements.

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, obtain details from 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 stockfeed 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 genera-
tion, steel processing or the manufacture of chemical
materials. A chemistry/computer science graduate could be in-
terested in the simulation of complex chemical processes
while a mathematics/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

In the study of a wide range of instruments, emphasis is placed
on electronic, nuclear, chemical, ultrasonic and optical in-
strumentation, on signal processing by analogue and digital
electronic techniques, 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 fodders 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/Diploma in Applied Science**

Standard entry to the first year of the degree/diploma 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 will be 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 will be 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 satisfac-
tory 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 enroling 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 (these are not included in this handbook), changes may be necessary either to complete the old syllabus or to effect the change to a new syllabus. Students who are in doubt about their courses should consult their mentors before attempting to re-enrol.

Assessment of student performance
Student performance is assessed by various methods e.g. formal examinations, tests held during the semester, project work, assignments and laboratory reports. A statement of the workload requirements and the assessment program for each course is 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:
HD High Distinction
D Distinction
C Credit
P Pass
N Not Pass
The student's overall progress during the year (or semester) is assessed, and issued as a faculty result in the following categories:
P Pass; where the student has passed all subjects undertaken.
FP 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).
N Not pass; where the student is not permitted to proceed to the next stage of the course.

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. A program of exchange between Swinburne and University of Surrey in England has 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 applied science student.

T.C.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 or a diploma (except in Environmental Health) 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

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<tr>
<th>Semester 1</th>
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Common first year — part-time

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<td>36</td>
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<tr>
<td>SC172</td>
<td>4</td>
<td>72</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 successfully complete the common first year and one of the following courses:
(a) double major in applied chemistry;
(b) biochemistry combined with chemistry;
(c) biophysics combined with instrumental science;
(d) chemistry combined with computer science, instrumental science or mathematics;
(e) computer science combined with chemistry, instrumental science or mathematics;
(f) instrumental science combined with biophysics, chemistry, computer science or mathematics;
(g) mathematics combined with chemistry, computer science or instrumental science.

The various degree course structures are described below. Some major studies or 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 demand arising. Details of part-time programs are available on request 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 for the students whose main interest is in chemistry, a thorough basis for a future career as a professional, industrial or research chemist. It features a series of elective subjects which support and extend the main themes of chemistry while amplifying the students’ industrial experience.

In 1982 minor modifications to the course will be introduced. Details of the modified semester 3 program are available from the head of the applied chemistry department.

Full-time course

<table>
<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
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<td>SC341</td>
<td>Applied Inorganic Chemistry</td>
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<td>Applied Organic Chem-stry</td>
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<tr>
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<td>Complementary Studies</td>
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Semester 4

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Semester 5

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Semester 6

| SC331 | Physical Chemistry | 3 | 54 |
| SC261 | Inorganic Chemistry | 3 | 54 |
| SC333 | Organic Chemistry | 3 | 54 |
| SC263 | Applied Physical Chemistry | 3 | 54 |
| SP355 | Applied Organic Chem-stry | 3 | 54 |
| AT393 | Elective subjects | 2 | 36 |
| SP355 | Communication Studies | 1 | 18 |

Part-time course

Students in approved employment can complete this degree course in six semesters (three years) after completion of the common first year. Further information is available from the Head of the Chemistry Department or from the Faculty Secretary.

2 Biochemistry/Chemistry

The 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 minor modifications to the course will be introduced. Details of the modified semester 3 program are available from the head of the applied chemistry department.
**Full-time course**

<table>
<thead>
<tr>
<th>Semester 3</th>
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<th>Hours</th>
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<td>SP305 Physics</td>
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<th>Semester 7</th>
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<td>*Elective subject (1)</td>
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<tr>
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<td>SA409 Special Project</td>
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<tr>
<td>BS493 Business Studies</td>
<td>4</td>
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</tr>
</tbody>
</table>

*The elective subjects are listed under Double major in Applied Chemistry.

**4 Biophysics/Instrumental Science**

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

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

**Part-time course**

Students in approved employment can complete the degree course in six semesters (three years) after the completion of the common first year. Further information is available from the Head of the Chemistry Department or from the Faculty Secretary.

**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 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 analogue and digital electronics.

**Full-time course**

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<thead>
<tr>
<th>Semester 3</th>
<th>Hours</th>
<th>Hours</th>
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<tbody>
<tr>
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### Full-time course

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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, acoustic, ultra-violet, X-ray and optical instrumentation together with a strong emphasis on information processing, digital and analogue electronics.

### Full-time course

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<td>BS495</td>
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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, regression analysis, etc., 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, acoustic, ultra-violet, X-ray and optical instrumentation together with a strong emphasis on information processing, digital and analogue electronics.

### Full-time course

<table>
<thead>
<tr>
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<th>Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
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<td>Signals and Systems</td>
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<td>SA409</td>
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<tr>
<td>BS495</td>
<td>Business Studies</td>
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</table>

### 8 Mathematics/Chemistry

As the mathematics major concerns the study of operations research, network analysis, linear programming and statistical analysis, the combination of these with the 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.

### Full-time course

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>SA309</td>
<td>Work Experience</td>
</tr>
</tbody>
</table>

9 Mathematics/Computer Science

The solution of many problems faced by business, industry and government can be facilitated by 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 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

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
<th>Semester</th>
<th>Hours</th>
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Semester 7

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<td>SC461</td>
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<tr>
<td>BS495</td>
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<td>BS495</td>
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*The elective subjects are listed under Double major in Applied Chemistry.

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

These courses are for students who require an alternative to the degrees in applied science. They are available for part-time study only and are designed to be completed in six years by students who attend for one afternoon and two evenings per week. Most subjects are offered only in alternate years. To be eligible for the award of a diploma, a minimum of twelve weeks of approved industrial experience must be completed.

Diploma of Applied Science (Applied Chemistry) (1979 syllabus)

First year

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Hours</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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Second year

<table>
<thead>
<tr>
<th>Year</th>
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<th>Hours</th>
<th>Semester</th>
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Diploma of Applied Science (Biochemistry) (1979 syllabus)

First year

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<th>Semester</th>
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Second year

<table>
<thead>
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<th>Hours</th>
<th>Semester</th>
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Third year

<table>
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<th>Semester</th>
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Fourth year

<table>
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Fifth year

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<th>Semester</th>
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Sixth year

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</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

Certificate in Chemistry

Students undertaking the course towards a diploma in applied chemistry may, by completion of appropriate diploma subjects, qualify for the award of a certificate. Details of the subjects required for a certificate are available from the faculty secretary.

Diploma of Applied Science (Biochemistry) (1979 syllabus)

First year

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
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Second year

<table>
<thead>
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<th>Semester</th>
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Third year

<table>
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<th>Hours</th>
<th>Semester</th>
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Fourth year

<table>
<thead>
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<th>Hours</th>
<th>Semester</th>
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Fifth year

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Hours</th>
<th>Semester</th>
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Sixth year

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Hours</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Seeds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For students who are in relevant employment a reduction in the hours of practical work may be approved. Students of the diploma courses in applied chemistry and biochemistry must not study subjects in a higher year unless all available subjects in the lower year have either been passed or are being studied concurrently.
Faculty of Applied Science
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 of the full-time course, Swinburne arranges for the work experience.

Full-time course

<table>
<thead>
<tr>
<th>Semester 1</th>
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<th>Hours</th>
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<td>SC191 Chemistry</td>
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<tr>
<td>SM121 Mathematics</td>
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<td>EA223 Industrial Chemical Processes</td>
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<td>CE223 Town and Country Planning</td>
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<tr>
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<tr>
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<td>54</td>
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<tr>
<td>SC311 Seminars, visits, etc.</td>
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<td>CE401 Health Engineering</td>
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<td>54</td>
</tr>
<tr>
<td>ME449 Environmental Engineering</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>SC411 Seminars, visits, etc.</td>
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<tr>
<td>BS499 Law</td>
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<td>63</td>
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<tr>
<td>SC385 Epidemiology</td>
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<td>BS390 Law</td>
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<tr>
<td>ME349 Environmental Engineering</td>
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<td>54</td>
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<td>SC311 Seminars, visits, etc.</td>
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<td>CE401 Health Engineering</td>
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<td>EA421 Industrial Processes</td>
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<tr>
<td>BS497 Office Systems and Administration</td>
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</tr>
<tr>
<td>SC411 Seminars, visits, etc.</td>
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<td>63</td>
</tr>
<tr>
<td>BS499 Law</td>
<td>3½</td>
<td>63</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 SA208 Work Experience and SA308 Work Experience in their course. Students of the part-time course must arrange for their own work experience. This experience must be for one year under the 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.
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 3</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC530</td>
<td>8</td>
<td>120</td>
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<tr>
<td>SC531</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Elective subject</strong></td>
<td>8</td>
<td>120</td>
</tr>
</tbody>
</table>

*The elective subjects are chosen from the following list:

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

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

Graduate Diploma in Biomedical Instrumentation (1978 syllabus)

This course is intended for graduates or diplomates working in the biomedical field whose previous training has not equipped them to appreciate or to use fully the techniques at their disposal. While the course establishes a foundation in general instrumentation and quantitative techniques, its orientation is predominantly biomedical. The program is designed as a two year part-time evening course, although a longer period may be taken if desired. The time-table specifies eight hours per week for four fifteen-week semesters.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPS11</td>
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<tr>
<td><strong>Elective subject</strong></td>
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*The elective subjects are chosen from the following list:

S1532 Digital Simulation Languages
S1533 Computer Techniques — Digital
S5M11 Mathematical Simulation Techniques

Semester 2

<table>
<thead>
<tr>
<th>Hours week</th>
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<tbody>
<tr>
<td>S1531</td>
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<td>S1534</td>
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<td>S5M12</td>
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</table>

In 1982 the 1977 syllabus will be phased out and a revised syllabus introduced. This new syllabus places greater emphasis on digital simulation languages.

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<thead>
<tr>
<th>Semester 1</th>
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Semester 2

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<td>S5M12</td>
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</table>

Graduate Diploma in Computer Simulation (1977 syllabus)

The 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 time-table specifying eight hours per week. It is expected that applicants will have a knowledge of mathematics and statistics at tertiary level. In some cases a preliminary unit in mathematical methods may be prescribed.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
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<tbody>
<tr>
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Semester 2

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Semester 3

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Semester 2

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Semester 3

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</table>
Graduate Diploma in Industrial Microbiology (1979 syllabus)

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

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

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

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

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
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<tbody>
<tr>
<td>SC541 Microbiology</td>
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<tbody>
<tr>
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<tr>
<td>SC545 Microbiology</td>
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<tbody>
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</tr>
<tr>
<td>SC548 Practical work</td>
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</table>

Graduate Diploma in Scientific Instrumentation (1979 syllabus)

The 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 time-table specifying eight hours (two evenings) per week for four fifteen-week semesters.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Hours week</th>
<th>Hours semester</th>
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</thead>
<tbody>
<tr>
<td>SP511 Measurement Principles</td>
<td>8</td>
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<tr>
<td>SP512 Transducers</td>
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<tr>
<td>EE420 Devices and Circuits</td>
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<td>SP513 Instrumental Practice</td>
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<th>Semester 2</th>
<th>Hours week</th>
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<tbody>
<tr>
<td>SP514 Instrumental Practice</td>
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<tr>
<td>EE421 Digital Techniques</td>
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<tr>
<th>Semester 3</th>
<th>Hours week</th>
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<tbody>
<tr>
<td>SP515 Signal Processing and Display</td>
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<td>30</td>
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<tr>
<td>SP522 Optical Systems</td>
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<tr>
<td>EE520 Programming Dedicated Processors</td>
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<table>
<thead>
<tr>
<th>Semester 4</th>
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<tbody>
<tr>
<td>SC503 Specific Instruments</td>
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</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>
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</thead>
<tbody>
<tr>
<td>SA</td>
<td>Applied Science</td>
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<tr>
<td>SC</td>
<td>Chemistry</td>
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<tr>
<td>SK</td>
<td>Computer Studies</td>
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<tr>
<td>SM</td>
<td>Mathematics</td>
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<tr>
<td>SP</td>
<td>Physics</td>
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<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

Two hours per week for one semester

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. Innovation 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.

SC131J/ 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 in applied science.
Electronic structure of atoms.
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
*Daniels, F. and Alberty, R.A. Physical Chemistry. 3rd edn, N.Y., Wiley, 1966
*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, complexion, 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
Freiser, H. and Fernando, Q. Ionic Equilibria in Analytical Chemistry. N.Y., Wiley, 1963
Fritz, J.S. and Shchen, C.H. Quantitative Analytical Chemistry. 3rd edn, Boston, Allyn & Bacon, 1974

SC151J/ 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 SC151J/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
Mackay, K.M. and Mackay, R.A. Introduction to Modern Inorganic Chemistry. 2nd edn, Lond., Intertext, 1972

* Strongly recommended
SC161/ Organic Chemistry
SC162 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.

References
Morrison, R.T. and Boyd, R.N. Organic Chemistry. 3rd edn, Boston, Allyn and Bacon, 1973
Morrison, R.T. and Boyd, R.N. Study Guide to Organic Chemistry. 3rd edn, Boston, Allyn and Bacon, 1975

SC171/ Biology
SC172 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 a 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 tissue
- Basic principles of the functioning of the skeletal, muscular, nervous, respiratory, digestive, urinary, and reproductive systems. Senses

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

SC182 Biology
Four hours of theory and two hours of practical work per week for one semester

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

A course which covers the fundamental elements of environmental biology listed below:

- Genetics structure and importance of gene and chromosome
- Mutation: variation applied to human populations
- Evolution taxonomic principles applied to plant, animal and protista kingdoms
- Causes and processes of evolution. Main evolutionary lines using selected examples of importance to public health

Ecology eco-systems, energy chains, food chains and food webs and their relationship to mammalian activity and function. Pollution and its effect on eco-systems

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.

Stoichiometry: chemical formulae, equations. Mass-mass, mass volume, redox calculations. Simple analytical procedures and the interpretation of experimental data

Kinetics. reaction rates, equilibria.

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

SC192 Chemistry
Two hours of theory and three hours of practical work per week for one semester

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

Equilibrium: Corrosion and pH

Equilibria gaseous, acid-base, redox, complex ion and solubility

Corrosion


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

SC207 Chemical Processes
Two hours per week for two semesters

A subject in the second year of the diploma of applied science (applied chemistry)

Thermodynamics of the extraction of metals. Co-ordination chemistry related to ion exchange, solvent extraction and catalysis. Thermal and catalytic cracking. Fuels and combustion.

A study of the main chemical and physical factors underlying the design of the major types of industrial equipment including transportation, heat transfer, drying, separation and measuring. There will be at least one visit to an industrial plant.

References
Perkins, M C Air Pollution Lond., McGraw Hill, 1974
Selinger, B Chemistry in the Market Place Canberra, ANU, 1975
SC213 Chemical Process Industries

One hour per week for one semester.
Prerequisite: completion of the common first year
An elective subject in the second or subsequent year of the degree courses for students majoring in chemistry.
The course consists of a detailed study of a number of the most important chemical processes, and a general study of the overall industrial situation.
The course is constructed on a seminar basis with discussion groups, readings and films. There is an assignment and students are offered the opportunity to participate in an appropriate excursion.

References
Selinger, B. Chemistry in the Market Place. Canberra, ANU, 1975

SC223 Analysis of Organic Compounds

One hour of theory/practical work per week for one semester
Prerequisite: completion of the common first year
An elective subject in the second or subsequent year of the degree courses for students majoring in chemistry.
This course reviews or introduces techniques commonly used to isolate and identify organic compounds which are not covered elsewhere in this semester. (emphasis is placed on applying such techniques and developing an awareness of situations in which each could be applied successfully. At least 48 hours are devoted to practical sessions during which a selection of the techniques is used.

References

SC231 Physical Chemistry

Two hours of theory per week for one semester plus practical work
Prerequisite: completion of the common first year
A second-year subject for degree students majoring in chemistry
Spectroscopy: some basic principles. Infrared spectra, including a detailed study of the spectra of classes of organic compounds. Quantitative analysis using atomic absorption and atomic emission methods.
Thermodynamics: effect of temperature (T) upon AH and AC for reactions. Variation of K with T. Efficiencies of reversible and irreversible processes; chemical potential.
Phase equilibria: the phase rule. One component systems: Clausius-Clapeyron equation, vacuum distillation. Two component systems: (a) binary liquid mixtures, Raoult’s law. Henry’s law, fractional distillation, steam distillation; (b) solid-liquid equilibria, cooling curves, fractional crystallization, zone refining; (c) solid-vapor equilibria.
Three component systems. Introduction to.

References
Avery, H.E. and Shaw, D.J. Basic Physical Chemistry Calculations. 2nd edn, Lond., Butterworths, 1980
Griffiths, P.J.F. and Thomas, J.D.R. Calculations in Advanced Physical Chemistry. 2nd edn, Lond., Arnold, 1971

SC233 Applied Physical Chemistry

One hour of theory per week for one semester plus practical work
Prerequisite: completion of the common first year
A second-year subject for degree students majoring in applied chemistry.
Kinetics: revision of SC131/SC132, experimental methods, determination of orders and rate constants, complex reactions, elucidation of rate laws from mechanisms, introduction to transition state theory, Colligative properties.
Spectroscopy: more basic principles. The rationale behind infra-red spectra. The UV/visible spectra of molecules.

References
Avery, H.E. and Shaw, D.J. Basic Physical Chemistry Calculations. 2nd edn, Lond., Butterworths, 1980
Griffiths, P.J.F. and Thomas, J.D.R. Calculations in Advanced Physical Chemistry. 2nd edn, Lond., Arnold, 1971
Mass transport in cells: diffusion, convection and migration. Limiting currents and importance to electroanalytical methods. Functioning of complete cell: dissipation of cell voltage in overpotentials and $IR$ drop.

Fuel cells and batteries, characteristics and differences, variety of, efficiencies of, comparison with internal combustion engines, electric cars.

**Chromatography**
The chromatographic separation process. Techniques and applications for column, gas, paper, thin layer and gel filtration chromatography.

**References**
Atkins, P.W. Physical Chemistry. Lond., Oxford University Press, 1978
Griffiths, P.J.F. and Thomas, J.D.R. Calculations in Advanced Physical Chemistry. 2nd edn, Lond., Arnold, 1971

**SC237 Applied Physical Chemistry**
One hour of theory per week for two semesters plus practical work
Prerequisites, SM151, SM152, SP101, SP102, SC131, SC132
A second-year subject in the diploma course in applied science (applied chemistry).

(i) state chemistry
(ii) defect structures and interaction. The elements of nucleation theory,
(iii) applications of (i) and (ii) to, for example, tarnish reactions, sintering and photographic processes.

**Rheology**
The study of the deformation and flow of matter.
(i) the behaviour of simple fluids, dilute and concentrated suspensions under the action of shear forces,
(ii) a study of time-dependent phenomena, e.g. thixotropy and rheopexy,
(iii) experimental methods for measuring rheological behaviour.

The non-ideal behaviour of solutes. Activities and activity coefficients, experimental determination and calculation of magnitudes and effects; effects of solvents and salts on chemical processes in solution.

**SC246 Analytical Chemistry**
One hour of theory per week for two semesters plus practical work
Prerequisites, SC141 SC142
A second-year subject in the diploma courses in applied science (applied chemistry) and (biochemistry).
The basic spectrometer, the spectrum and the interpretation of characteristic frequencies, peak widths and intensities.
The vibrational (infra-red) spectra of molecules
The electronic (UV/Visible) spectra of atoms and molecules
Chemometry, gravimetry, sampling and quality control.
Obtaining a representative sample of solids, liquids and gases
Sample preparation.
Application of statistical methods for routine checking of analytical techniques and for monitoring product quality.

Acid/base properties in non-aqueous solvents.

**References**

**SC247 Applied Analytical Chemistry**
One hour of theory per week for two semesters plus practical work
Prerequisites, SC141, SC142
A second-year subject in the diploma course in applied science (applied chemistry).
The basic analyser — its structure and frequency response.
Operational amplifiers and their use for amplification, for the control of chemical experiments and for analogue computing.
Pen recorders and other output systems, including integrators
Scope and application of electroanalytical chemistry
Controlled-potential vs. controlled-current techniques and instrumentation — application to coulometry. Solvents and supporting electrolytes, reference electrodes, types of indicator electrode material.
Limiting currents and the general voltammetric technique — stirred and unstirred solutions, indicator electrodes rotating and stationary cells.
DC polarography and its extension to advanced polarographic techniques; stripping analysis; diffraction, fluorescence and absorption spectroscopy.

**References**

**SC251 Inorganic Chemistry**
Two hours of theory per week for one semester, plus practical work
Prerequisite, completion of the common first year
A second-year subject for degree students majoring in chemistry.

**Topic 1:** periodic chemistry of selected compounds. The periodic variation of the properties of oxides, hydrides, fluorides, and hydrides, are discussed for the elements of the second and third periods. Emphasis is placed on the structural variation of the above compounds across periods, the variations in chemical behaviour, and the variation in behaviour with bond type. The ideas developed are extended to the compounds of the remaining group VI and VII elements, aspects of solubility of those compounds also being considered. The concepts developed for the main group elements are applied also to the transition metal elements and the lanthanides.

**References**
As for topic 2 of SC151/2 and

**Topic 2:** co-ordination chemistry.

**References**
Basolo, F. and Johnson, R.C. Coordination Chemistry. N.Y., Benjamin, 1964
Orgel, L.E. An Introduction to Transition Metal Chemistry Ligand Field Theory. 2nd edn, Lond., Methuen, 1968
SC253  Applied Inorganic Chemistry
One hour of theory per week for one semester plus practical work
Prerequisites, SC151, SC152
A second-year subject for degree students majoring in applied chemistry.
Non-metal chemistry: treatment of the chemistry and applications (industrial and environmental) of selected non-metals e.g., nitrogen and phosphorus. The relationship between the chemistry, application and preparation of the elements and their important consumer compounds is emphasised.

References
Durrant, P.J. and Durrant, B, Introduction to Advanced Inorganic Chemistry. 2nd edn, Longman, 1972
Toy, A.D.F. Phosphorus Chemistry in Everyday Living, Washington, American Chemical Society, 1976
Toy, A.D.F. The Chemistry of Phosphorus, N.Y., Pergamon, 1975
Jones, J.D. The Chemistry of Nitrogen. N.Y., Pergamon, 1972

SC256  Inorganic Chemistry
One hour of theory per week for two semesters plus practical work
Prerequisites, SC151, SC152
A second-year subject in the diploma course in applied science (biochemistry).
A periodic study of the chemistry of the more important compounds, e.g., oxides and hydroxides, halides.
Compounds of transition elements extended to co-ordination chemistry – including naming, structure, stereochemistry, stability and theoretherof, with particular emphasis on the aspects of biochemical importance, e.g., stability of chelates, optical isomerism of complexes and effects of complexing on electron transfer in biochemical systems.
Ion-exchange and radiochemistry; principles 3 and practice with emphasis on biochemical aspects.

References
As for SC251 Inorganic Chemistry

SC261  Organic Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisite, completion of the common first year
A second-year subject for degree students majoring in chemistry.
This is a second-course in the chemistry of inorganic compounds and includes an introduction to the use of spectroscopy in organic chemistry. Particular emphasis is given to preparation, reactions, underlying concepts, mechanisms and industrial application.

References
See lecturer in charge

SC263  Applied Organic Chemistry
One hour of theory per week for one semester plus practical work
Prerequisite, completion of the common first year
A second-year subject for degree students majoring in applied chemistry.
A course involving the principles of radical chemistry and photochemistry and their applications.

References
See lecturer in charge.

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: carbonation reactions, carbonium ion reactions, additions, substitutions, etc.
General properties of compounds such as acidity, basicity, reactivity and stereochemistry are systematically covered.
Emphasis is given to synthetic pathways and industrially significant reactions.
The application of instruments in organic analysis is extended to UV and NMR spectroscopy.

SC271  Microbiology
Two hours per week for one semester
Prerequisite, completion of the common first year
A second-year subject for degree students majoring in applied chemistry or biochemistry.
The course provides an introduction to the biology of microorganisms and to the basic techniques involved in handling microorganisms. Practical aspects will be integrated with the practical work associated with SC281.
Topics to be covered – microbial anatomy, introduction to microbial systematics, microbial growth and nutrition, sterilisation and antibiotics.

References

SC276  Physiology
Five hours per week for two semesters
Prerequisites, SC171 and SC172, SC173 and SC174, or equivalent
A second-year subject in the diploma course in applied science (biochemistry).
The aim is to present a study of human physiology from the following points of view:
(a) The physico-chemical processes underlying physiological mechanisms.
(b) The structure and function of organ systems.
(c) The integrated function of organ systems in overall bodily activity.
Emphasis is on the following — recording and instrumentation of physiological processes; the cardiovascular system; blood and body fluids; respiration; digestion, the renal system; immunology; endocrinology and reproduction; nuerophysiology and psychophysiology.

References

SC281  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; tetracarboxylic acid cycle, electron transport and oxidative phosphorylation; protein catabolism, urea cycle; biochemical techniques.
Lehninger, A.L. 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 aspects of the biology of the group to roles in diseases of man and of animals and plants of importance to man, as well as to roles in technological processes.

Physical and chemical anatomy: the general features of the physical structure of viruses, prokaryotic and eukaryotic cells. Consideration of structure-function relationships in bacteria, fungi and algae. Special features of chemical composition and macromolecular structure of microbial cells.

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

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

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 aspects of the biology of the group to roles in diseases of man and of animals and plants of importance to man, as well as to roles in technological processes.

Physical and chemical anatomy: the general features of the physical structure of viruses, prokaryotic and eukaryotic cells. Consideration of structure-function relationships in bacteria, fungi and algae. Special features of chemical composition and macromolecular structure of microbial cells.

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

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

SC286 Biochemistry
Three hours of theory and four hours of practical work per week for two semesters
Prerequisites, SC171, SC172, SC161, SC162
A second-year subject in the diploma course in applied science (biochemistry).

A general survey of the chemical compounds and reaction sequences used by living organisms. The metabolic sequences are integrated by emphasising control mechanisms at the kinetic, genetic and hormonal levels.

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 suitability for nutritional value. Role of vitamins and minerals. Metabolism of food.

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

Toxicology: biological action and use of 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.

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, S, 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.

SC313 Environmental Parameters
One hour per week for one semester
An elective subject in the third or final year of the degree courses for students majoring in chemistry.

Air pollution: types, sources, levels and effects. Smoke and sulphur dioxide — the English experience — the disasters, causes, attenuation, routine monitoring and current warning systems are discussed.

Photochemical smog: empirical modelling; modelling and prediction from the study of source intensities, levels and meteorology.

Air pollution in Melbourne:
(i) motor vehicle — nature, monitoring, levels and legislation;
(ii) industrial — dispersing from stacks — monitoring and licensing.

SC316 Electroanalytical Techniques
One hour per week for one semester
An elective subject in the third or final year of the degree courses for students majoring in chemistry.

A study of important electroanalytical (trace) techniques. Emphasis will be placed on the practical aspects of each technique, its area of application, advantages and limitations.

General electroanalytic procedure e.g. controlled potential vs. controlled current, electrolytic solvents and supporting electrolytes, reference electrodes and indicator electrodes will also be discussed. Specific techniques studied will include DC polarography and its extension to advanced polarographic techniques, stripping analysis, coulometry, potentiometry and ion selective electrodes.
SC321 Organometallics
One hour per week for one semester
An elective subject in the third or final year of the degree courses for students majoring in chemistry.

The preparation, chemical and physical properties of selected classes of organometallic compounds are discussed. They are chosen on the basis of current interest and their industrial, preparative and biological importance. Where appropriate the historical significance and bonding mechanisms of the compounds are presented. Appropriate practical work may be included in the program.

References
Meltis, L. Polarographic Techniques. N.Y., Interscience, 1965
Sawyer, T. and Roberts, I.J. Experimental Electrochemistry for Chemists. N.Y., John Wiley and Sons, 1974
Adams, R.N. Electrochemistry at Solid Electrodes. N.Y., Marcel Dekker, 1971
Lingane, J.J. Electroanalytical Chemistry. 2nd edn, N.Y., Interscience, 1966

SC324 Technology of Polymers
One hour per week for one semester
Assessment is by test and assignment

An elective subject in the third or final year of the degree course for students majoring in chemistry.

Classification of polymers: condensation; addition; kinetic; common condensation polymers; common addition polymers and their uses.

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 N.Y., Wiley
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
Stille, J.K. Introduction to Polymer Chemistry. N.Y., Wiley, 1962

SC325 General Polymer Chemistry
One hour of theory per week for one semester
An elective subject in the third or final year of the degree courses for students majoring in chemistry

The course includes:
- Special properties of polymers and their measurements;
- Polymerisation reactions and procedures;
- Examples of the manufacture of industrial polymers.

SC326 Surface Coatings
One hour of theory per week for one semester
An elective subject in the third or final year of the degree courses for students majoring in chemistry.

Topics include:
- Applications of protective organic surface coatings;
- Non-converting and convertible surface coatings, their chemistry and properties.

SC331 Physical Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisite: SC231

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


Colloid and surface chemistry: surface thermodynamics. Surface activity and orientation at interfaces, the Gibbs equation. Spreading of liquids, the nature of insoluble monolayers and their uses. Contact angles and wetting, practical considerations. Detergents, foams and emulsions.

Chromatography: the chromatographic separation process.

Adsorption, partition, gel filtration, thin layer, paper and gas chromatography.

References
Adams, R.N. Electrochemistry at Solid Electrodes. N.Y., Marcel Dekker, 1969
Adamson, A.W. Physical Chemistry of Surfaces 2nd edn, N.Y., Wiley, 1967
Crow, D.R. Principles and Applications of Electrochemistry Lond., Chapman and Hall, 1974
Shaw, D.J. Introduction to Colloid and Surface Chemistry. 2nd edn, Lond., Butterworths, 1970

SC332 Applied Physical Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisites: SC231, SC233

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

Colloid and surface chemistry: origin and description of electrical double layer. Electrokinetic phenomena. Colloid stability and applications.

Electrochemistry: introduction to and importance of electrochemical kinetics; multi-step electrode reactions; experimental methods applied to important electrochemical reactions.

References
As for SC331 Physical 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 electrolys (potentiostatic and galvanostatic) to refining and recovery of metals, treatment of waste, and synthesis Industrial costs and electrode5 — 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 phenomena studied.

(a) Liquid surfaces — surface and interfacial tension; 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
Shaw, D.J. Introduction to Colloid and Surface Chemistry. 2nd edn, London, 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

SC351  Inorganic Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisite: SC251

A third-year subject for degree students majoring in chemistry

SC361  Organic Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisite: SC261

The third-year subject for degree students majoring in chemistry
This is a course in fundamental organic chemistry extending previous principles to polyfunctional molecules. Particular emphasis will be given to acidity and basicity, carbon-carbon and carbon-heteroatom bonds involving both these compounds.

References

SC362  Applied Organic Chemistry
Two hours of theory per week for one semester plus practical work
Prerequisites: SC251, SC263

A third-year subject for degree students majoring in applied chemistry
The course comprises two sections:
(a) the principles of heterocyclic chemistry with particular emphasis given to compounds of medical and biological importance;
(b) the principles of synthesis as applied to compounds of industrial importance.

SC366  Applied Organic Chemistry
One hour of theory per week for two semesters, plus practical work
Prerequisite: SC266

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-streyl other elements, and photochemistry.
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.

**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 provides basic instruction in the techniques and methods of microbiology. Areas covered include microscopy, sterilization, and antiseptics, 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.

**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, sterilization, and antiseptics, 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.

**SC382 Biochemistry**  
Five hours of theory and nine hours of practical work per week for one semester  
Prerequisites, SC281, SC261  
A third-year subject for degree students majoring in biochemistry

The course deals with anabolic pathways emphasizing their control and co-ordination. The practical course will enable the student to apply a wide range of techniques to specific biochemical problems. Topics covered include the following:

- Mechanism of oxidative phosphorylation, pentose phosphate pathway, photosynthesis, gluconeogenesis, fatty acid and lipid biosynthesis, membrane structure.
- Biosynthesis of glycosidic linkages, porphyrins, steroids, purines, pyrimidines, proteins and nucleic acids.

**References**  

Lehninger, A.L. Biochemistry, 2nd edn, N.Y., Worth, 1975


Newsholme, E.A. and Start, C. Regulation in Metabolism. Lond., Wiley, 1977


(Additional references and reading materials will be specified during the course.)
SC401  Soil Chemistry
One hour per week for one semester
An elective subject in the final year of the degree courses for students majoring in chemistry.

Soil constituents
Primary silicate minerals in parent material and soils. Secondary minerals in the soil with emphasis on the types of clay minerals and the chemical and physical implications of the soil colloidal fraction.

Soil processes
The emphasis is on practical applications relevant to plant nutrition and agricultural management of soils in general. Chemical factors relating to the maintenance or obtaining of desirable soil physical properties; significance of cationic equilibria in soil and cation exchange capacity illustrated with field data; the chemical basis of soil pH and its nutritional importance, chemical aspects of necessary plant nutrient elements in the soil with particular emphasis on nitrogen, phosphorus, potassium and the micronutrients; soil organic matter; saline soils; trends in fertiliser usage.

Reference
Toohey, M.J., Chemistry of the Soil, Melbourne, Swinburne College Press, 1980

SC402  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 transpiration theory; field visits and report.

Pest control: recognition and control.

Fire engineering: fire control; architectural and building considerations; health surveyor’s role; public buildings; report.

Food and drug standards: a study of the framework for developing food and drug standards in Australia, particularly in Victoria.

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

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

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

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.

 Faculty of Applied Science

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 synfuel 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 per one semester
An elective subject in the final year for the degree courses for multidiscipline students engaging in the final year of the degree courses for chemical or biochemistry.

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

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 and 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 courses for students majoring in chemistry.

The course includes the following topics - general chemistry of food, metabolite 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: SC331

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 formulations 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, $G^*$, $A^T$, and hydrostatic pressure effects, high pressure chemistry.

References
Dickenson, RJ. Molecular Thermodynamics. N.Y., Benjamin, 1969
McClelland, B.J. Statistical Thermodynamics. Lond., Chapman and Hall, 1973

SC441 Analytical Chemistry
Three hours per week for one semester

A final-year subject for degree students majoring in chemistry

The basic analytical – its structure and frequency response. Data processing. Nuclear magnetic resonance spectroscopy. Mass spectrometry, including interfacing with a gas chromatograph.


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

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 as 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
(Additional reference and reading material will be specified during the course.)

SC491 Practical Chemistry
One hundred and eighty hours of practical work per 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 five 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 seminar 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
Colloidal Science — Faculty of Applied Science

**SC531 Colloid Experimental Techniques**

A core subject in 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, electron microscopy; conductometric and potentiometric techniques; measurement of flocculation rate; determination of particle size; surface spectroscopic studies etc.

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**SC532 Emulsion Technology**

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

**Principles**

Basic properties and characteristics of emulsions. The theory of emulsion stability — surface chemical factors, applicability of the DLVO theory, the role of macromolecules as emulsion stabilisers, stabilisation by finely divided solids, the properties of thin films. Methods of making and breaking emulsions. The HLB and PIT systems of emulsifier selection. The behaviour of surfactants and polymeric stabilisers. The design of steric and electrostatic stabilisers. Microemulsions. The properties, stability and rupture of foams.

**Applications**

Selected case studies deal with the area of cosmetic emulsions, food emulsions, bitumen emulsions, wax emulsions etc.

**Practical work**

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

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**SC533 Polymer Flocculation**

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

**Principles**

Types of flocculants — natural, synthetic, metal ions, flocculants in solution. Adsorption behaviour — bridging model, floc formation, floc structure. Flocculation and electrical double layer theory. Steric stabilisation; Selective flocculation. Sensitisation, protective action.

**Applications**

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

**Practical work**

Assessment of stability; methods for screening flocculants; effect of flocculant dosage, type and molecular weight on floc formation; the co-operative effect of metal ions and polyelectrolytes; effect of pH on flocculation; floc building; flocculation and filtrability; analytical methods for determining low concentration of flocculants; minor project work.
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 latices; 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: redox reactions; electrochemical cells; Nernst equation; conventions. Thermodynamic effects: relationship between $\Delta G^\circ$ 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 — applications to protection and inhibition. Corrosion by pure water. Case studies drawn from the following areas are dealt with: corrosion by potable water and in the marine environment; corrosion in steam condensers; cathodic protection; sacrificial protection; metallic coatings, oxide protection; inorganic and organic protective coatings; deactivation of brines; 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.

Microbial physiology.

Methods of control of micro-organisms.

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 industries; food spoilage, food poisoning, food legislation and recommendations. Microbial genetics, genetic engineering.

SC546 Practical work

Four hours of practical work per week for one semester

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

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

SC547 Microbiology

Three hours of theory per week for one semester

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

Industrial fermentations; biotechnology; use of computers in biotechnology.

Enzymes and fermentation control; microbial assay and monitoring; microbial ecology; biodeterioration; waste treatment.

SC548 Practical work

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 all the degree and diploma courses in chemistry, applied chemistry and biochemistry, practical work forms an important part of the main chemistry subjects except SC431, SC441 and SC461 which are final year subjects for students majoring in chemistry. The practical work is an integrated course which may relate to a number of chemistry subjects. The hours per week given in the course details include the appropriate practical work. The following complements the information given in the subject details.

All students must acquire a set of practical notes at the start of the first semester. Satisfactory completion of the practical work is required before examinations. In combination with the theory assessment, the student's ability in practical work will form part of his final assessment in the appropriate subjects.

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 illustrate 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

Degree second year

This integrated practical course occupies seventy-two hours for students majoring in chemistry or one hundred and twenty-six hours for students taking a double major in applied chemistry. It forms part of SC231/3, SC251/3 and SC261/3 and is designed to teach accurate analytical techniques, some organic techniques and some of the principles of physical chemistry.

Degree third year

This integrated practical course occupies fifty-four hours for students majoring in chemistry or ninety hours for students taking a double major in applied chemistry. It forms part of SC331/3, SC351 and SC361/3 and is designed to teach organic techniques, some analytical techniques and some of the principles of physical chemistry.

Diploma third and fourth years

This practical course is designed to teach analytical techniques, 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</td>
<td>SC246, SC247</td>
</tr>
<tr>
<td>330*</td>
<td>SC266</td>
</tr>
</tbody>
</table>

Biochemistry

<table>
<thead>
<tr>
<th>Hours</th>
<th>Related subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>SC236, SC246</td>
</tr>
<tr>
<td></td>
<td>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 twenty 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 SC387.

Diploma sixth year

Applied chemistry students undertake one hundred and twenty hours of practical work associated with SC366.

Biochemistry students undertake ninety hours of practical work associated with SC367.

Reference

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 students to structured programming concepts and techniques.

Students are required to complete several programming exercises as an integral part of the course.

Textbook

References

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

References
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 on which assessment is based.

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 science.

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 or 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. A study at an advanced level of computing principles and techniques during which students gain programming practice and complete assignments on which assessment is based.

Topics covered include: theory of computation; software engineering (including participation in a software hut); data structures, algorithms and file handling (including numerical processes and error handling); computer organisation and architecture; operating systems; test processing; and two units from the following list of computer applications: real-time systems, simulation and modelling; computer communications; data base system design.

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

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

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

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

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 programming practice and complete assignments on which assessment is based.

Topics covered include: theory of computation; software engineering (including participation in a software hut); organisation of programming languages; systems programming; and four units from the following list of computer applications: real-time systems; simulation and modelling; computer communications; data base system design; computer graphics; computers and society.

The above applications 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 solution 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
SK515 Computer Techniques — Hybrid
Sixty hours in one semester
Prerequisites, SK513 and SK514 or equivalent experience

A subject of semester three of the graduate diploma course in computer simulation (1977 syllabus).

This unit integrates the concepts studied in the earlier units and introduces the student to the use of hybrid computers.

The course considers:
(a) the hardware of a hybrid computer including devices such as registers, flip-flops, analogue-to-digital and digital-to-analogue devices;
(b) the software required to support such a system;
(c) the special facilities offered by hybrid computers to model builders; and
(d) a selection from the following list of applications:
   (1) Transient queueing theory with multiple servers
   (2) Linear controls system simulators
   (3) Traffic control simulation
   (4) Chemical processing plant simulation
   (5) Vehicle dynamics
   (6) Case pipeline networks
   (7) Hodgkin and Huxley nerve membrane activity

SK516 Project Work
Sixty hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience

A subject of semester three of the graduate diploma course in computer simulation (1977 syllabus).

In this subject and in SK518 all students undertake, under supervision, practical work in simulation. They are encouraged to undertake problems from as wide a range of disciplines as possible, but emphasis is placed upon projects which relate to the student's own areas of interest.

SK517 Case Studies
Thirty hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience

A subject of semester four of the graduate diploma course in computer simulation (1977 syllabus).

The units which comprise this subject round off and integrate the concepts, tools and techniques studied in the earlier part of the course. Each unit consists of a detailed examination, led by practitioners in the art and science of simulation in several real-life studies. For each problem the group considers critically the origins of the problem, its formulation into a model, the problems associated with the implementation of the model and finally, the ultimate degree of success or otherwise of the problem's solution.

A large proportion of discussion leaders are drawn from the ranks of those actively using simulation techniques in industry or research.

SK518 Project Work
Forty-five hours in one semester
Prerequisites, SK513, SK514 and SK515 or equivalent experience

A subject of semester four of the graduate diploma course in computer simulation (1977 syllabus).

In this subject, as in SK516, all students undertake 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 placed upon projects which relate to the student's own areas of interest.

Satisfactory completion of such practical work is a necessary condition for completion of the course.

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, subject to supervision, practical work in simulation. Each student is encouraged to undertake problems from as wide a range of disciplines as possible, but emphasis is placed upon projects which relate to the student's own areas of interest. Students must submit for approval an initial brief proposal of the project work they intend to undertake.

Satisfactory completion of the project work is a necessary condition for completion of the course.

This project work continues in SK520.

SK520 Project Work/Case Studies
Seventy-five hours in one semester

A subject of semester four of the graduate diploma course in computer simulation.

In this subject the student completes the project commenced in SK519, and gives a presentation of the project that is being undertaken. Additionally, a number of other cases of simulations are examined. Each study consists of a detailed examination of some industrial or scientific problem, the understanding of which has been enhanced by the methods of computer simulation and each involves the origin of the problem, its formulation into a model, the problems associated with the implementation of the model and finally, the ultimate degree of success of the problem's solution.

SK522 Digital Simulation Languages
Forty hours in one semester

Prerequisite, SK512

A subject of semester two of the graduate diploma course in computer simulation.

This is a study of the advances in the use of general purpose languages for the solution of discrete and continuous simulation problems. Special purpose languages for the solution of continuous systems are studied (e.g. DARE-P, ASP) and several exercises in the use of these special purpose languages are undertaken.

SK523 Computer Techniques — Analogue/Hybrid
Sixty hours in one semester

A subject of semester three of the graduate diploma course in computer simulation. The analogue computer is a parallel processor specially suited to the simulation of problems in dynamics. The course deals with the components of an analogue computer, programming, scaling, hard-wiring and obtaining suitable displays. Practical experience is provided through 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 (H01), FORTRAN 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 three semester three of the graduate diploma course in computer simulation.  
This subject studies the use of special purpose simulation languages for the solution of discrete systems, such as GPSS, INS, CSL, and one of these languages will be studied in detail. Several practical exercises are undertaken in this language.

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 has 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 graphical 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.  
An 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. Differential equations, standard first order types, second order linear with constant coefficients.

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, variates and statistical distribution, 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 co-ordinates, differentiation with respect to a parameter, simple line integrals. Parametric co-ordinates for a surface, simple surface integrals.

Workshops  
References  
Piskunov, N. Differential and Integral Calculus. 2nd edn, Moscow, Mir Publishers, 1974  
Shenk, A. Calculus and Analytic Geometry. Santa Monica, Calif., Goodyear, 1979  

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.  
Error types and analysis, solution of non-linear 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  
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 distribution (discrete and continuous): binomial, Poisson and normal;  
(b) sampling theory: means, difference of means, t-, x² 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.

Workshops  
Preliminary reading  
References  
Shenk, A. Calculus and Analytic Geometry. Santa Monica, Calif., Goodyear, 1979

AS30
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
Daniel, C. Applications of Statistics to Industrial Experimentation, N.Y., Wiley, 1976
Mendenhall, W. Introduction to Probability and Statistics 4th edn, Belmont, Calif., Duxbury, 1975
Mendenhall, W. The Design and Analysis of Experiments, Belmont, Calif., Duxbury, 1977
Mendenhall, W., Ott, L. and Schaeffer, R.L. Elementary Survey Sampling, Belmont, Calif., Duxbury, 1971
Mendenhall, W. and Schaeffer, R.L. Mathematical Statistics with Applications, Belmont, Calif., Duxbury, 1973
Moore, P.G. Basic Operational Research, Lond., Pitman, 1968
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 biology, instrumental science or computer science.


References

SM351 Mathematical methods
Nine hours per week for one semester
Prerequisite, SM251
A third-year subject for degree students majoring in mathematics.
Topics include: operations research approach to problems, classical optimisation, linear and integer programming, queueing 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
Hadley, G.F. Linear Programming, Reading, Mass., Addison-Wesley, 1969
Open University, Linear Programming — Theory 1972
Open University, Linear Programming — Application, 2nd edn, N.Y., Wiley, 1972
Moore, P.G. Basic Operational Research, Lond., Pitman, 1968
Naylor, T.H. et al. Introduction to Linear Programming: Methods and Cases, Belmont, Calif., Wadsworth, 1971
British Standard 2338, Glossary of Terms Used in Work Study, Lond., British Standards Association, 1969
Barnes, R.M. Motion and Time Study, 3rd edn, N.Y., Wiley, 1949
Stuart, A. Basic Ideas of Scientific Sampling, Lond., Charles Griffin, 1962

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
See lecturer in charge
SM451  Mathematical Methods  
Eight hours per week for one semester  
Prerequisite: SM451  
A final-year subject for degree students majoring in mathematics  
Topics include: game theory, forecasting and inventory control, financial modelling,  
dynamic programming, simulation, replacement, analysis of variance,  
non-parametric statistics, case studies, practical project seminars.  
(Some topics in SM351 and SM451 may be interchanged.)  
References  
SM511  Mathematical Simulation Techniques  
Three hours per week for one semester  
A subject of semester one of the graduate diploma in computer simulation.  
Topics may be selected to accommodate the needs and interests of the students undertaking the unit.  
References  
SM512  Mathematical Simulation Techniques  
Fifty hours in one semester  
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  
A subject of semester four of the graduate diploma in computer simulation.  
The subject is based on the following: analytic and simulation approach to operations research, models in queuing, forecasting,  
inventory, allocation, sequencing and replacement, design, testing and validation of models.  
Other topics may be included and the above topics varied to accommodate the needs and interests of the students undertaking the unit.  
References  
Consult the lecturer in charge  
SP101  Physics  
Five hours per week of theory, practical work and tutorial classes. Continuous assessment by tests and practical work.  
A compulsory subject in the common first year of the degree/diploma courses in applied science.  
Mechanics of particles, bodies and fluids; thermal physics; fields, electrical devices and circuits.  
Recommended texts  
Weidner, R.T. and Sells, R. Elementary Modern Physics. Alternate 2nd edn, Boston, Allyn and Bacon, 1974  
SP102  Physics  
Four hours per week of theory, practical work and tutorial classes. 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  
Weidner, R.T. and Sells, R. Elementary Modern Physics. Alternate 2nd edn, Boston, Allyn and Bacon, 1974
SP111 Physics
Three hours of theory and two hours of practical work per week for one semester
Continuous assessment by tests and practical work
A first-year subject in the diploma course in applied science (environmental health).
Properties of matter: gases, liquids, solids, change of state, calorimetry, temperature measurement.
Acoustics: waves, vibratory motion.
Electrical: electromagnetism, electrical measurements (DC) and (AC)

Recommended text

SP12 Physics
Two hours of theory and two hours of practical work per week for one semester
Prerequisite, SP111
Continuous assessment by tests and practical work
A first-year subject in the diploma course in applied science (environmental health).
The atom: emission and absorption of radiation, X-rays.
The nucleus: radioactivity, nuclear reactions, radioactivity measurements.
Electromagnetic waves, geometric and physical optics, signals and signal processing; transducers, Instrument principles. Laser applications. Industrial metrology.

Recommended text

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
Prerequisites, completion of the common first year
Assessment is continuous by tests and by 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 SM263
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
Prerequisite, SP213
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
Prerequisite, SP223
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, obstetric instrumentation, bio feed-back.

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 and image processing, lasers, signal recovery techniques, digital electronics, microprocessors, interfacing techniques, control systems, nuclear, vacuum and chemical instrumentation, 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 feed-back 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 biomedical instrumentation and 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 biomedical instrumentation and 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 biomedical instrumentation and scientific instrumentation.

Instrument components and mechanisms; practical workshop experience; printed circuit board techniques; wire wrapping, etc.

SP514 Instrument Electronics
Fifty hours in one semester

A subject of semester two of the graduate diploma courses in biomedical instrumentation and scientific instrumentation. This 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 biomedical instrumentation and 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.

SP516 Biomedical Project
Thirty hours in one semester

A subject of semester three of the graduate diploma course in biomedical instrumentation.

The design and construction of an item of equipment relevant to the participant's professional activity is started (e.g. microprocessor-based EEC monitoring system).

SP517 Cardiovascular Monitoring
Twenty hours in one semester

A subject of semester three of the graduate diploma course in biomedical instrumentation.

Invasive and non-invasive transducers for pressure and flow on selective electrodes and monitoring serum ion levels.

Determination of cardiac output and regional blood flow. Automated monitoring of cardiovascular system.

SP518 Neurological Monitoring
Twenty hours in one semester

A subject of semester four of the graduate diploma course in biomedical instrumentation.

Consideration of specific instrumental requirements.

Computer-aided diagnostic procedure involving central, peripheral and sensory system.

Computer analysis of evoked and spontaneous EEG in the time and frequency domain.

The EMG, its recording and analysis.

Stimulation techniques, e.g. electrical, mechanical, vestibular.

SP519 Respiratory Monitoring
Ten hours in one semester

A subject of semester four of the graduate diploma course in biomedical instrumentation.

Transducers for the measurement of pressure and flow.

Assessing lung mechanics and the complex respiratory impedance.

Transducers for blood gas analysis.


SP520 Biological Imaging Techniques
Twenty hours in one semester

A subject of semester four of the graduate diploma course in biomedical instrumentation.

Ultrasonic techniques.

X-ray methods with a consideration of computer-aided techniques.

Nuclear medicine. Thermography.

SP521 Biomedical Project
Seventy hours in one semester

A subject of semester four of the graduate diploma course in biomedical instrumentation or on a continuation to completion of the project commenced in SP516 biomedical project.

SP522 Optical Systems
Fifty hours in one semester

A subject of semester three of the graduate diploma course in scientific instrumentation.


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

AT192 Health and Society
Two hours per week for one semester
Assessment is continuous
A first-year subject in the diploma course in applied science (environmental health).
Emphasis in this course will be on topics in psychology such as:
motivation, adjustment, personality and sexual behaviour. Attention will also be given to coping with environmental stress and anxiety.
Recommended reading

AT291 Complementary Studies
Two hours per week for one semester
Assessment is continuous
A second-year subject in all degree courses in applied science.
This course has two objectives. The first is to train students in business communications and report writing. The latter will give students experience in literature searching, constructing a bibliography and conducting an investigation leading to the preparation of a report. The second objective is to expand students’ understanding of Australian society.
Current social issues — such as unemployment, immigration and automation — will be examined against a background of information and theory concerning the functions of our social, economic and political systems, as a means of developing communication skills.

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 reports. Each student is expected to present two reports. One on work experiences, the other a critical assessment of a scientific or technical topic. A satisfactory standard of presentation 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
Recommended reading
Preliminary reading
Reading and other resources will be given where appropriate.

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

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 precedence.
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: BS192
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 offence.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Prerequisites</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>BS390</td>
<td>Law</td>
<td>BS293</td>
<td>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 1958, 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.</td>
</tr>
<tr>
<td>BS497</td>
<td>Office Systems and Administration</td>
<td></td>
<td>A final-year subject in the diploma course in applied science (environmental health). A study of office procedures and administrative principles applicable to municipal and other public bodies. Particular attention is given to record-keeping and its relevance to evidence for prosecutions.</td>
</tr>
<tr>
<td>BS499</td>
<td>Law</td>
<td>BS390</td>
<td>A final-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 are examined and applied in practical application to a mock trial.</td>
</tr>
<tr>
<td>CE223</td>
<td>Town and Country Planning</td>
<td></td>
<td>A second-year subject in the diploma course in applied science (environmental health). An introduction to town-planning techniques. Victorian planning structure and legislation, map techniques, the preparation of planning data, regional concepts, neighbourhood planning. The practical tutorial work includes visits to new developments within the metropolitan area and an introduction to the preparation of planning reports. References: To be advised by the lecturer.</td>
</tr>
</tbody>
</table>
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

Prerequisite, EA122

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/or 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 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 workplace.

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 topics 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.

EE420  Devices and Circuits  
Sixty hours in one semester, comprising approximately forty hours of lecture/tutorial work and twenty hours of laboratory work.

A subject of semester one of the graduate diploma courses in biomedical instrumentation and scientific instrumentation.

This subject provides a review of the electronic fundamentals necessary for the appreciation of more advanced electronic instrumentation.

Electrical circuit elements and circuits: behaviour of circuit elements: electrical network analysis; electrical measurements and instruments. Electric circuit responses: initial state and voltage step responses of first order circuits: phasors, impedance and AC circuit behaviour. Operational amplifiers: characteristics and applications in simple configurations. Semiconductor devices and applications: junction diode characteristics and applications to rectifying, clipping, clamping and logic circuits; field effect and junction transistor characteristics and applications in simple low frequency amplifiers. Power supplies: capacitor input and choke input filters; Zener diode regulators; voltage doubler circuits.

References


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 courses in biomedical instrumentation and scientific instrumentation.

Switching transistors, IC logic families, binary signals. Logic gates, truth tables, Boolean logic, combinational logic circuits.

MSI and LSI combinational logic devices and applications.

Flip flops, synchronous and asynchronous systems.

MSI and LSI counters, registers and memory devices.

Logic state machines. Digital-to-analogue and analogue-to-digital conversion.

Serial and parallel data transmission, data busses.

Microprocessor introduction.

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 courses in biomedical instrumentation and scientific instrumentation.

An introduction to computers, minicomputers, microcomputers and microprocessors. Philosophy and architecture of stored program controlled computers for on-line control and monitoring applications.

Basic language programming for dedicated microcomputer/minicomputer applications.

Assembly language and machine language program development for dedicated microprocessor applications.

Survey of available processors.

References

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

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, O₃, 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

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

ends applied science section
Academic staff ........................................ AR2, AR6

Courses offered in Graphic Design
Undergraduate
— Diploma in Graphic Design ....................... AR3
— Degree in Graphic Design .......................... AR3
— Subject details ....................................... AR4

Courses offered in Film and Television
Undergraduate
— Diploma in Film and Television ................ AR6
— Graduate Diploma in Film and Television ...... AR6
— Subject details ....................................... AR7

General Information .................................. G1
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, FPI, AIA
D G Murray, DipArt, TTTC

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

Principal Tutors
P Gajree, FLIP, FRPS
N J Maling, CertEd ATTDip

Senior Tutor
C J Austin, DipArt

Art courses offered

Full-time courses in the Faculty of Art are offered in the following areas:

Graphic Design (degree) 4 years cooperative
Graphic Design (diploma) 3 years full-time
Film and Television (diploma) 3 years full-time
Applied Film and Television (graduate diploma) 1 year full-time

Undergraduate courses: degree, diploma

Applicants must 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 successfully completed 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 course in Graphic Design

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 hours</th>
<th>First year</th>
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<tbody>
<tr>
<td></td>
<td>AR101 Assigned Projects 340</td>
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<td></td>
<td>AR111 History of Arts 1 34</td>
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<td></td>
<td>AT183 Applied Writing 34</td>
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<td>BS193 Typewriter Keyboard Training 45</td>
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<td>AR140 *Results of Studies 1</td>
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<tr>
<th>Semester hours</th>
<th>Second year</th>
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<tbody>
<tr>
<td></td>
<td>AR201 Assigned Projects 2 340</td>
</tr>
<tr>
<td></td>
<td>AR211 History of Arts 2 34</td>
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<td></td>
<td>AT204 Social Science 2 34</td>
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<td>AR240 *Results of Studies 2</td>
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<tr>
<th>Semester hours</th>
<th>Third year</th>
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<tr>
<td></td>
<td>AR301 Assigned Projects 3 340</td>
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<td></td>
<td>AR320 Methods of Production 3 34</td>
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<td></td>
<td>AT381 Applied Psychology 34</td>
</tr>
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<td>AR340 *Results of Studies 3</td>
</tr>
</tbody>
</table>

*Subjects to be taken by part-time study.

Degree course in Graphic Design

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.

Explanation of course structure

Conversion Cooperative
degree degree

Fourth year conversion diploma/degree

<table>
<thead>
<tr>
<th>Semester hours</th>
<th>Fourth year conversion diploma/degree</th>
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<tbody>
<tr>
<td></td>
<td>AR410 Assigned Projects 4 306</td>
</tr>
<tr>
<td></td>
<td>BS491 Business Administration 51</td>
</tr>
<tr>
<td></td>
<td>AT482 Theory of Communications 34</td>
</tr>
<tr>
<td></td>
<td>AR441 Result of Studies</td>
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</tbody>
</table>

*Subjects to be taken by part-time study.

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
Pre-requisite, nil
Assessment is continuous

Assigned Projects refer to a co-ordinated three-year work program with specific emphasis on a creative approach to solving communication problems, principally of a graphic nature. Students are encouraged to develop their own personal style through soundly reasoned, skillfully-executed assignments and to communicate the solutions in a way most likely to ensure acceptance and successful implementation. Group 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 awareness and competence of a broad range of communication problems, while the development of special individual interests is also provided for.

Photography
A comprehensive introduction to still-photography as a creative medium aimed at cultivating visual awareness through study of controlled lighting, spatial relationships, form, product and fashion photography, photo-journalism, photo-reproduction techniques (e.g. developing and printing), pictorial editing, various colour processes and costing.

Design for print
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 and technical illustration
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.

BS193 Typewriter Keyboard Training
Three hours per week for one semester
Pre-requisite, nil
Assessment is continuous, based on a series of tests

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
Pre-requisite, AR(140), 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 the third year. The aim of the second year is to bring the student to a professional standard of competence in the illustrative, typographic, written and oral presentation of ideas, in the arrangement of sequential information embracing publishing, advertising, sales promotion, merchandising and public relations, also for non-commercial areas such as education and community organisations. Study areas include design, photography, methods of production, typography, history of art and sociology. Instead of studying these subjects in isolation, the aim is to integrate them into composite communication problems wherever possible.

Methods of production
A comprehensive study of photo-mechanical and direct printing procedures. Photo-engraving, letterpress, offset lithography, rotogravure, silk-screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression typesetting for book, advertising and display typography.

AR211 History of Arts 2
Two hours per week for two semesters
Pre-requisite, AR(140), 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

Social science and communication
The subject is designed to develop social science and communication skills which are related to graphic design. The social science element provides information about Australia’s social profile and this is integrated with the development of written and oral communication skills, especially those complementary to graphic design. A further development is based on a particular interrelationship between social science and communications, i.e., social research.

A number of social groups are examined and used as the basis for a communication exercise both oral and written. Written communication skills include the writing of objectives, working out rationales, planning a schedule, writing reports and submissions, and writing copy. Oral skills include interviewing, responding, non-verbal language and assertiveness training.

AR111 History of Arts 1
Two hours per week for two semesters
Pre-requisite, 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
Pre-requisite, nil
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.
Social research techniques to be examined include defining populations, sampling, defining the characteristics of target populations, creating a questionnaire, interviewing and desk research. Students are required to put these techniques into practice and in doing so become aware of the applications of social survey skills to market research. Students also have the opportunity to test the response of the public in relation to their own design work through exercises in community service promotions as part of AR201 Assigned Projects 2.

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 in photo-mechanical and direct-printing procedures. Photo-engraving, letterpress, offset lithography, rotogravure, silk screen, type identification, indication and specification, the point system, copy-casting, proof-reading, copy preparation techniques, practical exercises in direct impression typesetting for book, advertising and display typography. 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 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, AR141 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, AR141 Result of Studies 3
Assessment is continuous

The aim of this subject is to introduce students to the major bases and problem areas of the modern firm. It consists of two sections: the first dealing with economic and accounting concepts as they influence managerial decision-making. The second section is concerned with marketing and organizational behaviour. It relates to problems of decision-making in the administration of people and in the formulation of marketing programs.

AT492 Theory of Communications
Two hours per week for two semesters
Prerequisite, AR341 Result of Studies 3
Assessment is continuous

In this subject, the aim is to expand graphic artists' range of communication media relevant to their profession. It includes examination and discussion on techniques of present-day media; film, 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 course in Film and Television

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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<thead>
<tr>
<th>Semester hours</th>
<th>First year</th>
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<tbody>
<tr>
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<td>AR151</td>
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<td>AR162</td>
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<th>Second year</th>
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<td>AR251</td>
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<td>AR262</td>
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<td>AR241</td>
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<td>AR271</td>
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<td>AR351</td>
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<td>AR362</td>
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<td>AR365</td>
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<td>AR371</td>
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Note: Results will be published for each subject and for the year as a whole. "Results of Studies" is not a subject, but is a clear-cut decision on the student's total success or otherwise in the year's studies (see under 'Assessment').

Graduate Diploma in Applied Film and Television

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

One year full-time.

<table>
<thead>
<tr>
<th>Semester hours</th>
<th>AR400 Assigned Projects (2 semesters)</th>
<th>340</th>
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<tbody>
<tr>
<td></td>
<td>AR401 Results of Studies</td>
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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
Video 12
Film 6
Animation 6

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

The history of film is explored through lectures and the screening and discussion of selected classics. Students contribute to the presentation of information in formal sessions and also submit written assignments on set topics.

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, AR171 Result of Studies 1
Assessment is continuous

In second year this subject relates to the history of film, including the evolution of genres. Representative classics and more recent films are screened and discussed. Students present criticisms of these films in written form.
AR241  Script Writing 2
Two hours per week for two semesters
Prerequisite, AR171 Result of Studies
Lectures cover the basic principles of dramatic structure such as the choice of theme, characterisation, character development, action, point of attack, orchestration, conflict, climax and resolution. Points made are related to the major film genres.
Students are encouraged to write short scripts with the possibility of theirs being produced as assigned projects.

Third year
AR351  Assigned Projects 3
Twenty hours practical per week for two semesters
Prerequisite, AR361 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/styles
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
These studies require the student to undertake a critical appreciation of a ‘school’ of film-making or the achievement of a distinguished director and to prepare a 3000 word essay on the subject.

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 lecturers.
References
Lipton, L. Independent Filmmaking. Lond., Studio Vista, 1974
Millenson, 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
Elizabeth A. Williams, BA, DipCrim
Administrative Officer
Merrileas Simpson
Office of the Dean
J.E. Baxter, MS, BA, BEd

Academic Staff

Department of Humanities

Chairman
P.G. Kent, BA, MEd
Senior Lecturers
J. Dooley, MA, DipEd
H. Kannegiesser, BA, MEd
Lecturers
T.F. Barr, BA, BEd
Patricia Excell, BA(Hons)
P.J. Fleming, MA
A. Hakeem, MA
Rosaleen Love, BSc, CHPS, PhD

Department of Languages

Head
B. Warren, MA, DipEd
Senior Lecturer
N. Fukushima, BA, DipEd
Lecturers
C. D’Aprano, BA, ATTG, DipAdvStud
Takako Machida, BA, BEd
Helen Marriott, MA, MEd
M. Masini, BA(Hons), DipEd
Senior Tutor
Laura Hougaz, BA, DipEd

Department of Liberal Studies

Head
PF. Thompson, BA, DipEd
Senior Lecturer
A.G. Browne, BA, BEd
Lecturers
Patricia Mitchell, BA(Hons), CertEd
J. Morison, BA, DipSocStud
R.H. Smith, BA, TPTC, MACE
Marijke van Geloven, Drs, MAPsS
Senior Tutors
Moira McAdcliffe, BA(Hons), GradDipArt(App1iedTV)

Department of Psychology

Head
M.A. Howe, MA, FAPsS, FIPMA
Senior Lecturers
J.P. McLennan, MA, DipEd, MAPsS
J. Wangeman, MA, BCom, BEd, MAPsS

Lecturers
R.H. Cook, BSc(Hons), MEd, MAPsS
A.J. Evans, MA, MAPsS
G.H. Gotts, MSc, MAPsS
Susan Kelly, BA, DipEd, MAPsS
C.D. Robinson, MA, MAPsS

Senior Tutors
Janette G. Simmonds BA, EdM, MAPsS
Kate Funder, BA, BEd, MAPsS

Department of Social and Political Studies

Chairman
T. Burke, MSocSci, BEd(Hons)
Senior Lecturers
D.Y. Mayer, MA, LLB
G.G. Nichols, BA
F. Walsh, BA, BEd
Maryann G. Wulff, MA, PhD
Lecturers
Tanya Castleman, PhD
Stephanie de Boer, BA(Hons), TPTC, MACE
Linda Hancock, BA(Hons), PhD
S. Lakha, BSc(Hons), GradDip Urban Studies
K. Rowley, BA(Hons)
J. Schmidt, MA
R.R. Smith, MA, LLB
R.C. Taner, BA(Hons)
Senior Tutor
B. Bottomley, MA
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Arts courses offered

Bachelor of Arts
Diploma of Arts
(for students who first enrolled prior to 1982)
Graduate Diploma in Applied Social Psychology
Graduate Diploma in Urban Sociology

Undergraduate courses

Bachelor of Arts/Diploma of Arts
From 1982 all students will 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 VCE 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 must apply through the Victorian Universities Admissions Committee. Application for a part-time place must be made directly to Swinburne.

Prospective students should ascertain the relevant closing dates for applications in September or early October of the year preceding that in which they would like to commence studies.

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, deferrals 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.

Bachelor of Arts course requirements
In order to complete a degree, a student must:
(a) gain passes in subjects totalling a unit value of twenty-four from stages one, two and three;
(b) gain passes to the value of at least six units in stage two subjects approved for the purpose*;
(c) complete two majors in subject areas which have stage three degree approval, one of which must be Italian, Japanese, Media Studies, Political Studies, Psychology or Sociology. The second major may be chosen from this group or from Historical and Philosophical Studies, Literature or Economics. A double major may be taken in Political Studies or in Psychology.

* Students who enrolled for the first time before 1976 may be eligible to count exemptions towards their stage two unit value.

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.

Unless special permission is granted, students should:
— include no more than ten stage one semester subjects
— include no more than two majors.

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

To be eligible for degree selection at the end of stage two, a student must have passed the prerequisites for the proposed stage three degree subjects.

Applications for degree selection will be received in October each year, for the following academic year. Students who hope to begin stage three degree studies at the beginning of the second semester of a year need to apply for degree selection in the previous October. Applications for degree selection must be lodged at the Faculty of Arts Office (BA915) by 31 October.

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.

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.

AT4
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 16 April 1982. For a subject which concludes at the end of the second semester — not later than Friday 17 September 1982. (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 Student Records Office or at the Faculty of Arts Office (BA915). 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 16 April 1982. For a subject which concludes at the end of the second semester — not later than Friday 17 September 1982. (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 (BA915) or the Student Records Office and return their identity cards. (For further details see under the section headed ‘Enrolment regulations’.).
Selection of subjects

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).

Students choosing their majors have available a wide range of combinations (e.g. sociology with literature, psychology with historical and philosophical studies, politics with media studies, Japanese with political studies, and so on). Most combinations are possible, apart from historical and philosophical studies with literature, or either of these with economics.

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.

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 given by the lecturers in charge. Usually, a combination of progressive assessment and examinations is employed.

Reading lists

For preliminary reading, recommended reading and textbooks in each subject, see under individual subject entries. Students are advised not to buy any textbooks until classes have met.

Subjects available for selection

Faculty of Arts subjects, together with information on unit values and prerequisites, are detailed under the headings of the faculty’s departments set out below.

Subjects are grouped according to departments within the faculty. This grouping should not weigh too heavily with students in planning their courses. 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. Law and Society.

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.

Department of Social and Political Studies

Political studies

Sociology

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 or Amendment to Enrolment forms.

Scholarships and Prizes

Study in Japan Scholarship

Awarded to assist a student to complete Japanese 3 in Japan. Applications close in May. Value: may include return airfare to Japan and tuition fees.

APS Prize in Psychology

Awarded by the Australian Psychological Society to the student who has completed with overall distinction a fourth year course in psychology at Swinburne. Value: $100.

The A.F.E. Tylee and the K. Kennewell Memorial Prizes

These are awarded in the fields of social science, mathematics and civil engineering.
Humanities

The Humanities department comprises three main subject areas — historical and philosophical studies, literature, and media studies.

Diploma/degree subjects offered

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<th>Stage 1</th>
<th>Code</th>
<th>Title</th>
<th>Unit value</th>
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<tr>
<td></td>
<td>AT102</td>
<td>Introduction to Philosophy</td>
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<td></td>
<td>AT106</td>
<td>History of Ideas</td>
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<td>AT107</td>
<td>Theories of the Universe</td>
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<td></td>
<td>AT120</td>
<td>Twentieth Century Literature</td>
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<td>AT122</td>
<td>Nineteenth Century Literature</td>
<td>1</td>
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<td></td>
<td>AT130</td>
<td>Introduction to Communication Theory</td>
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<td>AT132</td>
<td>Forms of Communication</td>
<td>1</td>
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<td>AT134</td>
<td>Contemporary Writing and Production</td>
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<td>AT202</td>
<td>Moral and Political Philosophy</td>
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<td>AT204</td>
<td>Mind, Language and Thought</td>
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<td>AT205</td>
<td>Technology and Society</td>
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<td>Elizabethan and Jacobean Literature</td>
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<td>Seventeenth and Eighteenth Century Literature</td>
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*Not available for diploma students

Historical and philosophical studies

The subjects offered under the heading of historical and philosophical studies draw on the traditional areas of philosophy, 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 major biased towards history and philosophy of science is AT106 or AT107, AT205, AT206, AT304, AT305, AT306, AT307. A philosophy-oriented major is AT102, AT202, AT204, AT301, AT302, AT306, AT307, and one of a variety of integrated 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.

Historical and philosophical subject details

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

Recommended reading


Plato. The Republic. 3rd edn, Harmondsworth, Penguin, 1974


Shaffer, 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. The Wellsprings of Life. N.Y., New American Library, 1960

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading

Darwin, C. The Origin of Species


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

AT107 | Theories of the Universe
Four hours per week (three hours evenings)
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

Recommended reading


AT204 | Mind, Language and Thought
(Previously AT201 Mind Language and Human Nature)
Four hours per week (three hours evenings)
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.

Recommended reading

AT205 | Technology and Society
Four hours per week (three hours evenings)
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 anti 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

Textbooks
Klemm, F. A History of Western Technology. Lond., Allen and Unwin, 1970
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 times; 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  

Recommended reading  

AT301 Aesthetics, Education and Reason — diploma/degree  
Five 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  

Emphasis in this subject is on the changes in approach resulting from the influence of Wittgenstein and the methodology of linguistic analysis. The role of theory is examined, and the movement from a traditional theory of knowledge to a theory of meaning.  

Correct interpretation is based upon two related areas:  
(a) linguistic analysis and the justification of educational objectives; intrinsic and extrinsic values; moral obligation; an analysis of the concepts of ‘growth’, ‘autonomy’, ‘mental health’ and ‘rationality’;  
(b) the problems of definitions, interpretation and evaluation of works of art, emotions and feelings; uniqueness of works of art; the problem of standards or criteria in evaluation; the problem of meaning and the author’s intention; the education of emotions.

Textbooks  
Please consult with lecturer before buying textbooks.

Recommended reading  
Dewey, J. Experience and Education. Lond., Capricorn Books, 1963  
Peters, R.S. Ethics and Education. Lond., Allen and Unwin, 1970  
Stevenson, C.L. Ethics and Language. Yale, Yale University Press, 1944  

AT302 Aesthetics, Education and Reason — degree  
Two 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  

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.

Recommended reading  
Trigg, R. Reason and Commitment. Lond., Cambridge University Press, 1973  

AT304 Science and Change — diploma/degree  
Five 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  

In this subject the problems faced by those who sought to understand the nature of matter are examined. The first section is set against the background of the upheaval in scientific knowledge which characterised the seventeenth and early eighteenth centuries. The second section is devoted to a study of the scientific biographies of twentieth century men and women who first worked in the field of atomic physics in order to investigate the relation of the pure science study of matter theory to its applied science derivatives in medicine and warfare.

Textbooks  
Leicester, H.M. The Historical Background of Chemistry. N.Y., Dover, 1971  

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  

A series of seminars devoted to a special study of Sir Isaac Newton and Albert Einstein.

Textbooks  
Clark, E.W. Einstein, the Life and Times. Lond., Hodder and Stoughton, 1973  

AT306 Philosophy of Science — diploma/degree  
Five hours per week  
Prerequisites, two of AT202, AT204, AT205, AT208 or an approved equivalent  
Assessment is continuous  

An introduction to some of the central topics in current and classical philosophy of science. Topics are selected from (a) the constraints placed by social factors on scientific research; (b) laws, theories and explanation; (c) induction and probability; (d) space, time, (e) causality, (f) paradigms and conceptual schemes.
Preliminary reading
Theobald, D. An Introduction to Philosophy of Science. Lond., Methuen, 1968
Toulmin, S. Philosophy of Science. Lond., Hutchinson, 1953

Textbooks
Please consult with lecturer before buying textbooks.

Recommended reading
Durbin, P. Philosophy of Science. N.Y., McGraw-Hill. 1968
Kuhn, T. The Structure of Scientific Revolutions. 2nd edn, Chicago, University of Chicago Press, 1970

AT307 Philosophy of Science — degree
Two hours per week
Prerequisite, 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 philosophical and historical bases of instrumentalism; the American pragmatists; Dewey’s role in the development of instrumentalism; criticisms of the instrumentalist mode of thought; the realist view.

Preliminary reading
Frank, P. ed. The Validation of Scientific Theories. N.Y., Collier Books, 1961

Textbook

Recommended reading
Hart, R. The Philosophy of Science. Lond., Oxford University Press, 1972
Smart, J. Between Science and Philosophy. N.Y., Random House, 1968

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 enrol 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.

Literature subject details

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
Dawson, S.W. Drama and the Dramatic. Lond., Methuen, 1970
Deutsch, B. A Poetry Handbook. 2nd edn, Lond., Cape, 1965

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 involvement from social concerns. Both English and European fiction and drama, and English poetry are studied in the course.

Preliminary reading
As for AT120.

Alternative course in literature/media studies
It may not be possible to offer AT134 in every year. Please check on its availability when enrolling.

AT134 Contemporary Writing and Production
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 an important part of their work will be 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.
Media studies subject details

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 presentation of academic essays, technical reports, business correspondence, public relations and press releases, while oral communication exercises train students in public speaking and the preparation 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, and, 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

AT133  Aesthetics of Media
(This subject replaces AT132 Forms of Communication)
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, cartoons 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, Baudel and surrealism, Italian neo-realist, Bergman and expressionism, French new wave. Students will be involved with at least one minivisual or sound production — an audio-visual presentation, or super 8, black and white or colour photography, video or sound work. The emphasis in examinations 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, Lond., Oxford University Press, 1977
Alternative course in literature/media studies

It may not be possible to offer AT134 in every year. Please check on its availability when enrolling.

AT134 Contemporary Writing and Production

It should be noted that this counts as 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 these 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 an 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, examinations of works from rough draft to finished product, visits to theatre, both front and backstage, and rehearsals; tapes and readings and interviews with overseas writers, workshops and discussion sessions on writing produced by the group.

Detailed reading lists will be available at the end of first semester.

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 practice of print in 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. Written 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

This 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 many forms and in interaction with society. There is a continuing examination of the political, social and ethical issues concerning media, especially electronic media, television and radio. The vexed questions surrounding ownership and control, accountability, power and influence of mass media are discussed, primarily in an Australian context. The role of media in political process and the politics of Australian broadcasting, with reference to commercial radio and television, the ABC, multicultural and community broadcasting, are analysed. The revival of the Australian film industry during the 1970s, the quality and variety of contemporary writing in indigenous film making, and issues in indigenous film making, are canvassed. Students have the opportunity to be involved in the production of a public affairs radio program based on the issues raised during the course.

Recommended reading


McQueen, H. Australia's Media Monopolies. Melb., Widescope, 1977

AT334 Television Aesthetics and Radio Production — diploma degree

(This subject replaces AT330 Writing for Radio and Television — diploma degree)

Five hours per week

Prerequisites, AT31 or AT134 or 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 Sullivan, Against the Wind, Days of Hope, 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 Fantasia from Heaven — actually television, soap and situation comedies, police dramas — The Sweeney, Starky 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 notions, vocal elements, role of the narrator, FX, experimental formats, musique concrete, and alternative recording technology. Students are given instruction in sound procedures and the opportunity to participate in the production of a sound 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

Hawkes, 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 — diploma degree

(This subject replaces AT332 Communications and Human Behaviour — diploma degree)

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 media 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 affairs radio program.

Recommended reading

AT337 Media Public Policy — degree

Two hours per week
Prerequisites, as for AT334
AT337 should either be preceded by, or taken concurrently with, AT336
Assessment is partly continuous, partly by examination
Subject details are the same as for AT336 Students select specific topics for study in depth

AT377 Media Public Policy — degree

Recommended reading
As for AT336

Languages

Diploma/degree subjects offered

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*Not available for diploma students

Italian

This course is designed to acquaint students with the Italian language, the native tongue of Australia’s largest migrant group. The aim is to provide the student with the means whereby communication with Italians is possible, both linguistic and socio-cultural.

Italian subject details

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

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.

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.

AT313
Japanese

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 Australia. This course trains students to communicate effectively in Japanese and it also provides the opportunity to study Japanese culture, society and economy through the language. The emphasis is on contemporary Japanese.

Japanese 1, 2 and 3 form a major sequence in the language.

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, in the following order:

(i) AT114, Communication in Japanese A which is offered in second semester, while simultaneously taking AT112, Japanese 1;

(ii) AT115, 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.

Japanese subject details

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.

Recommended reading


AT115 Communication in Japanese B

Four hours per week (one evening)

Prerequisite, nil

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


Recommended reading

Miura, A. English Loanwords in Japanese. Rutland, Va., Tuttle, 1979

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 language. 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 AT115 which is offered in first semester.

Textbooks


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. This subject contains four major components: grammar, aural comprehension, reading and conversation. The aural comprehension component is concentrated on recent radio broadcasts. In the reading component students have the opportunity to select a variety of options related to their interests or vocational needs. Options may vary from year to year but usually cover Japanese economics, language usage, technical Japanese, literature, politics and Japanese life-styles.

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 1 Vols. I and II, Tokyo, Inter-University Centre for Japanese Language Studies, 1971

Recommended reading

Please consult with instructors before buying these books. Chaplin, H.I. and Martin, S.C. A White-Collar Worker’s Day. New Haven, Conn., Yale University, 1977
Gerdoni, T. Nihon no Shaka (Komin). Tokyo, Chukyo, 1981
Shosei Keizai Tokyo, Sanseido, 1980
Takeshima, M. Biruma no Tatogoto. 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 unabridged newspaper articles which are complemented by additional language exercises.

Textbooks and recommended reading
As for AT312

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Psychology

Diploma/degree subjects offered

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<th>Stage 1</th>
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<td></td>
<td>SM278</td>
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<td>AT352</td>
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<td>AT355</td>
<td>Psychology 3D</td>
<td>1/2</td>
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</table>

*Not available for diploma students

In both diploma and degree studies at stage three students are expected to take either AT350 or AT352 in one semester and make up the necessary pair to complete a major strand by taking either AT353 or AT355 in another semester.

To complete the degree major in psychology, students must also take AT351 and AT354.

Commencing in 1982 it will be possible for selected students to take a double major in psychology within their course for the degree of Bachelor of Arts. Students wishing to take this option must apply to the Department of Psychology Secretary in the first semester of the 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. The course 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 to students taking degree studies.

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.)
AT150 Psychology 1A
Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisite, AT150
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 are required to read this paperback before classes commence.)

Textbooks
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 applications of psychology. The design and analysis of experimental studies are a major part of the teaching program.

Textbooks
As for AT150

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.

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
Sants, J. and Butcher, H., eds. Developmental Psychology Harmondsworth, Penguin, 1976
Tucker, N. What is a Child? Glasgow, Fontana, 1977

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

SM278 Design and Measurement 2A
Five hours per week daytime
Four hours per week evening
Prerequisites, AT150 and AT151
Assessment is continuous

A stage two, first semester subject in research design and statistical analysis is planned to complement concurrent and future studies in psychology.

In this subject the emphasis is on understanding the methodology of basic research design and how the associated statistical analysis can provide answers to research questions. Students also receive instruction in the use of the Statistical Package for the Social Sciences (SPSS). This computer package will be used to analyse data both in this course and in second and third stage courses in psychology.

Topics to be studied include factorial designs with one and two factors and the associated analysis of variance, correlation coefficients and their applications, and regression analysis with an introduction to multiple regression.

Textbooks

SM279 Design and Measurement 2B
Five hours per week daytime
Three-and-a-half hours per week evening
Prerequisite, SM278
Assessment is continuous

A stage two, second semester subject in research design and statistical analysis that is designed to complement concurrent and future studies in psychology.

In this subject the topics 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 curvilinear trend analysis, analysis of covariance, nonparametric methods and factor analysis.

Textbooks
As for SM278 and in addition:

References

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 open system theory, this subject concentrates on ways of explaining and understanding the behaviour of people who are part of an organisation.

Important dimensions of behaviour in organisations are examined to provide perspective for studying the psychological well-being of individuals within a variety of organisational settings.

Inter and intra-personal influences: motivational, perceptual, communicational, interpersonal relationships, leadership and authority.

Consequences: vocational choice, entry and maintenance; industrial relations and well-being.

Laboratory sessions are devoted to the process and procedures that allow effective assessment of behaviour in particular organisational contexts.

Recommended reading
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 emphasizes 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.

Recommended reading

AT352 Psychology 3B — diploma degree
(Psychology of personality)
Four hours per week
Prerequisites, AT250 and AT251
Students are strongly recommended to complete SM1270 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:
1. Basic concepts and influential theories
2. Assessing and understanding persons
3. Current issues in theory and research
4. Research methods
5. 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 on ‘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 crisis points;

(d) Conflict, frustration, aggression and anxiety

Preliminary reading
Laruarus, R.S. Patterns of 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 follow up particular interests in 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 investigative techniques used by social scientists. Following this experimental stage, students are encouraged to consider theoretical issues relating to the methods used, including ethical considerations.

Preliminary reading
Social and political studies

Diploma/degree subjects offered

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<tr>
<th>Stage 1</th>
<th>Code</th>
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<td>Foundations of Modern Politics</td>
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<td>AT142</td>
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<td>AT144</td>
<td>Australia and Underdevelopment</td>
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<td>Foundations of the Third World</td>
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<td>AT241</td>
<td>Sociology and Development in China</td>
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<td>AT246</td>
<td>The Chinese Revolution</td>
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<td>AT247</td>
<td>Modern Japan</td>
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<td>AT270</td>
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<td>AT342</td>
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<td>AT347*</td>
<td>Relations between Japan and Asia</td>
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* Not available for diploma students

Political Studies

Political Studies has two principal areas of concentration: Australia and Asia. The subjects offered set the political dimensions of the societies studied in their broad social and historical contexts.

Students can make their own choices from a variety of subjects. There are, however, three main themes around which students may decide to concentrate their studies — Australian politics, social change in Asia, political economy of underdevelopment.

The political studies area gives students a critical and evaluative look at the whole structure of our society in the late 20th century. By focusing on our own Australian society, and at the same time providing a perspective upon Asia, the subject area defines our position in our own society more sharply and conveys some understanding of our influential neighbours.

A wide choice of combinations is offered. Single subjects or a major sequence may be taken; alternatively students may select a double major in political studies.

Political Studies subject details

AT140 Australian Politics

Four hours per week (three hours evening)
Prerequisite, nil
Assessment is by class work and essays

This subject is an introduction to Australian politics. To begin with the subject covers the basic framework of government. The following topics are considered: the constitutional basis, federalism and the Westminster system, parliament, cabinet and the public service. 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.

Preliminary reading
Forrell, C.R. How We Are Governed. 8th edn, Melb., Longman, Cheshire, 1979
or
Jones, A. ABC of Politics. 3rd edn. Cassell, Australia, 1978

AT141 Foundations of Modern Politics

Four hours per week (three hours evening)
Prerequisite, nil
Assessment is by class work and essays

This subject is an historical introduction to the major political movements that have shaped Europe in the 20th century. The focus is on the interaction of social and political change within states and international relations. The course begins with a survey of capitalism, the nation-state, democracy and imperialism in the 19th century, but concentrates mainly on the period since 1914. It examines the rise of Soviet communism, the rise of Nazism in Germany and the origins of the two World Wars and the Cold War.

Recommended reading

AT142 Law and Society

Four hours per week (three hours evening)
Prerequisite, nil
Assessment is by class work and essays

The objective in this subject is to explore the relationship between the law and the society it purports to serve. Part of this relationship involves the nexus between changes in social attitudes and behaviour and the implementation and enforcement of the law. Implicit within this is the role and performance of law enforcement agencies in a modern democratic society. The question 'For whose benefit does the law exist?' provides a good starting point.

Recommended reading

AT144 Australia and Underdevelopment

(Previously AT145, Global Power and Underdevelopment)

Four hours per week (three hours evening)
Prerequisites, nil
Assessment is by essays and tutorial participation

This subject introduces a critical examination of underdevelopment in today's world. It examines the restructuring of the world economy since the 1950s and the implications of that restructuring for Australia and for the 'Third World'. How and why do multinational companies have the capacity to organise resources across the globe? Are they development agents or are they really agents for underdevelopment?
The subject includes topics on multinational and food production, the growth of manufacturing especially in Asia, the proportional decline of manufacturing in Australia and our rising dependence on primary resources. The concluding question -- "Is Australia being underdeveloped?"

Preliminary reading

AT146 Foundations of the Third World
Four hours per week (three hours evening)
Prerequisite: nil, but students would be assisted by AT144, Australia and Underdevelopment
Assessment is by essay and tutorial participation

What has produced the condition of underdevelopment in the "Third World"? Why does beneath the surface of the poverty that plagues much of the world's population? These questions are considered in the context of the emergence of industrialised, urban, nationalistic and revolutionary movements in southeast Asia as a background to a study of some of the features of the region since 1945. The latter include: communism, authoritarian government political violence, minority participation in politics, students and political activity.

Recommended reading

AT147 Modern South-East Asia
Four hours per week (three hours evening)
Prerequisite: nil
Assessment by papers

An examination of the nature, success and failure of selected nationalist and revolutionary movements in southeast Asia as a background to a study of some of the features of the region since 1945. The latter include: communists, authoritarian government political violence, minority participation in politics, students and political activity.

Recommended reading

AT148 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 classwork and essays

This subject concerns 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, examines 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.

Recommended reading
Park, J. 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 students may choose AT241 Political Sociology, or AT273 Sociology 2D, but not both
Assessment is continuous

In this subject, key aspects of the relationship between politics and society are examined. It is an introduction to the theme of power and its exercise. Its main objectives to provide students with the basic skills necessary to identify and understand major forms of power, which they can apply to their immediate environment or to the broader dimensions of society.

Topics to be considered include the historical background to political sociology; classic views about the nature of human beings and society; an analysis of the concepts of power, authority and influence, with reference to Max Weber: the problem of locating power in modern society and an examination of three theories of power and society, namely Marxist, elitist and pluralist theories; the definition of democracy and the debate about its various models.

Recommended reading
Dowse, R.E. and Hughes, J.A. Political Sociology. London: John Wiley and Sons, 1972, ch. 1

AT245 Socialism and Development in China
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.

Recommended reading

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. The study combines the perspectives of history and politics. Peasant movements and the impact of western influence on the disintegration of China are taken into account. Special emphasis is placed on cultural, social and institutional change in China after 1949 with some examination of contemporary Chinese society.

Recommended reading

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 Japanes 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 operations and employer-employee relations.

Recommended reading

AT340 Public Policy in Australia — diploma/degree
Five hours per week 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 local 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 process in Australia, are also considered. The approach taken is through a series of case studies of contemporary policy issues with emphasis on economic, health, welfare and foreign policy areas. Examples of case studies include: The depression of the thirties, economic policy and the Scullin Labor Government.

Economic and social welfare policy and the expansion of Commonwealth powers under the Curtin and Chifley Labor Governments, including the bank nationalisation issue.
The Australian-American alliance, Menzies and the Vietnam war. The 1972-75 Whitlam Labor Government, social reform and its limits, the problems of social welfare and economic policy. Fraser and the new conservatism — social, economic and foreign policy under the Fraser Liberal Government.

Preliminary reading

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 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.

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.

References

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 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 there is becoming capitalist and the consequences of that development. Other topics include the changing role of imperialist control in colonial and post-colonial periods, together with its consequences for class formation, persisting poverty and non-progressive change in land reform; agricultural modernisation; and industrialisation.

Recommended reading
Hiro, D. Inside India Tokyo, N.Y., Monthly Review Press, 1979

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 southeast 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 AT146. Discussion centres around the consequences of dependency and the degree of complementarity in those relationships.

An alternative course examines Japan's relationships with Taiwan, North Korea, South Korea, the People's Republic of China and the USSR. Students are expected to investigate Japan's relationship with one state and to contribute to discussions of the implications and consequences of Japan's policies in east Asia.
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 course composed of two semesters of study.

At stage two, students may choose two only of the four sociology subjects available, and are strongly advised to take AT270 Sociology 2A (Methodology of Social Research) if they intend to pursue degree studies in sociology.

Not more than two stage two sociology subjects may be taken. Students may enrol in either AT273 Sociology 2D or AT241 Political Sociology but not both. It is possible to take AT241 as a political studies subject in addition to two stage two sociology subjects.

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.

Sociology subject details

AT170 Sociology 1A

(Individual and social groups)

Four hours per week (three hours evening) Prerequisites, 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 the systematic study of society and its elements, stressing the relationship between individuals and the groups they make up. Topics covered include the way people become members of different groups, take on social roles and learn accepted notions of behaviour, the institutions of culture, religion and families, and the processes of social differentiation and the underlying structure and rituals of everyday life.

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, class structure, racial inequality, industrial sociology, education, families and kinship, urbanisation and models of capitalist industrial societies.

Elementary methods of data analysis are taught but no statistical knowledge is assumed. There is an optional program of films and videotapes.

Recommended 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


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 apply for degree studies are encouraged to enrol for this subject which will be offered in second semester. In first semester students may choose one of Sociology 3A, 3C or 2D.

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 course 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 course. Assessment usually consists of practical exercises, class workshop participation and a practical research project.

The course has two emphases in teaching approaches:

(a) sociological research raises fundamental problems of the social context of research (e.g. 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


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, white collar and corporate crime, government corruption and structuralist critiques of society and the legal system. The study of deviant behaviour and social control raises questions about the nature of social order and the use of knowledge and power by decision-makers and social control agents in ways that reinforce the dominance of more powerful groups over the less powerful in society.

The subject is focused on different theoretical perspectives on deviance and the consequent variations in the sorts of problems studied, the methodology adopted and the types of results obtained. Such changing definitions of deviance also reflect historical and political changes within sociology, particularly the relationship between sociological research and social policy. An attempt is made to locate these questions within the context of Australian as well as overseas studies.

Preliminary reading

References
Wilson, P. and Braithwaite, J. Two Faces of Deviance. St Lucia, Queensland University Press, 1978

AT272 Sociology 2C
(Sociology of deviance and social control)
Four hours per week (three hours evening)
Prerequisites, AT170 and AT171
Assessment is continuous

AT273 Sociology 2 D
(Political sociology)
Four hours per week (three hours evening)
Prerequisites, AT170 and AT171, or an approved equivalent

For description of this subject see AT241 Political Sociology

AT370 Sociology 3A — diplomadegree
(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
Prerequisites, as for AT370
A series of advanced seminars dealing with issues in the methodology of social science.

AT372 Sociology 3B — diplomadegree
(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 Harmondsworth, Penguin, 1975

AT373 Sociology 3B — degree
Two hours per week, second semester
Prerequisites, as for AT372
A series of advanced seminars dealing with current issues in sociology.

AT374 Sociology 3C — diplomadegree
(Minorities)
Five hours per week day and evening
Prerequisites, two stage two sociology subjects
Assessment is continuous

In this subject, minority groups are studied in the context of the larger society. Three types of minority groups are considered: racial minorities, cultural minorities and sexual minorities. Special attention is given to a general theoretical understanding of minority groups in diverse situations. Australian society is also studied in relation to Aboriginals, migrants and women.

Preliminary reading
Krej, J. Rate Relations in Sociological Theory. Lond., Wiedenfeld and Nichelson, 1970

References
Booker, G. and Carrier, J. eds, Race and Ethnic Relations. Holmes and Meier, 1976

AT375 Sociology 3C — degree
Two hours per week, second semester
Prerequisites, as for AT374
A series of advanced seminars dealing with current issues in sociology.
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 (SP153 and SP154 are multi-disciplinary subjects taken as two single semester subjects, either together or separately.)

**SP153 Science in Modern Society**
- Four hours per week during first semester
- No prerequisite
- Assessment by examination

**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
- Physics and sport
- Light and colour
- Astronomy
- Science and medicine
- Science and foods
- Aspects of genetics
- Human physiology
- Important chemicals in modern society
- Computers in society
- Aspects of geology

Intending students are invited to discuss this subject with the relevant Department of Physics staff.

**SM171 Mathematics**
- Five hours per week in first semester
- Prerequisite: SM171
- Assessment is continuous

A first-year subject which provides a foundation for studies in the theory of numbers, mathematical analysis, geometry and probability theory.

Intending students are invited to discuss this subject with the relevant Department of Mathematics staff.
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, some of 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 in economics the following subjects must be taken:

**Stage 1**

- B5111

**Stage 2**

- B5211 and B5213
- Or one plus any other selected from: B5214, B5311, B5312, B5315, B5316 or B5319.

**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. B5111 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 B5111 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 B5211 or B5213.

**B5111 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 the balance of payments policies in achieving simultaneously internal and external balance.

**References**


**BS211 Managerial Economic Analysis**

Prerequisite: B5111 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 decision-making. Empirical studies will be used as a means of illustration. The unit deals with the following topics: demand analysis (demand theory, empirical demand studies including forecasting), production and cost analysis (opportunity cost, short-run and long-run production and cost curves), profit, and goals of firms; pricing policies of firms and public utilities.

**References**


**BS213 Industry and Government**

Prerequisite: B5111 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 economics 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.

**References**

- Galbraith, J.K. *Economics and the Public Purpose*. Harmondsworth, Penguin, 1975

**BS214 Industrial Relations**

Prerequisite: B5111 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:

(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 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.
(3) techniques for evaluating government expenditure programs (with particular emphasis on cost-benefit analysis).

Recommended reading:
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 BS313 Industry and Government
In this unit, the aim is to broaden students' familiarity with the nature and scope of research undertaken in economics and to increase students' ability to analyze 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. Extensive use is made of current journal articles.
A detailed list of references is made available during the course.

BS315  Monetary Economics
Prerequisite, BS111 Economics 1
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:
(1) finance markets, nature and role of finance; economic development and financial development, evaluating the performance of finance markets, short-term money markets, official discount, banks, commercial bills, and inter-company loans; capital markets - primary and secondary, rigidities and dislocations in the finance markets, the question of controls.
(2) monetary theory: classical; Keynesian; neo-Keynesian and modern quantitative 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

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. This recognises that urban problems are multi-faceted, demanding a multi-disciplinary approach. The unit covers the following broad areas: economic analysis and urban problems, urban location decisions, decentralisation, government and private roles in urban development, public policy and urban problems with particular reference to housing, the environment, and energy.

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, international 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

Other Business subjects offered
See the Faculty of Business Handbook for full details of:
BS103 Accounting 1A
BS109 Accounting 1C
BS108 Tilt Australian Legal System
BS121 Introduction to Data Processing
BS312 Administrative Studies 1

BS091  Personal Typing
Four hours per week
Prerequisite, nil
Assessment by tests
This one-semester subject is designed principally to teach the student to type by touch to approximately 30 w.p.m. and to set out a typed report in its entirety, for the purpose of submitting class assignments. In addition, students prepare personal business letters. Enrolled students are expected to attend all sessions, and no concession is made for typing tuition undertaken previously.

Textbook
Supplied
Graduate courses

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:

Semester 1
AT450  Applied Social Psychology
AT451  Research Design and Analysis
AT453  Quantitative Methods in Social Research
AT455  Small Group Processes

Semester 2
AT452  Ethical Aspects of Social Research
AT454  Individual and Social Change
AT456  Issues in Social Psychology
AT457  Special Applications Option

Progress through the course

Usually the course can be completed in a minimum of two semesters for full-time students, but for all students a maximum of six semesters is allowed for completion of the required eight subjects. A program review committee of the Psychology Department will consider students' progress at the end of each semester.
Applied social psychology subject details

AT450 Applied Social Psychology
After a review of the current status of social psychology, including major theoretical perspectives, this subject presents students with a broadly-based model of applied social research. It then examines paradigms for social research in a variety of areas, for example: opinion or attitude research, law and society, and market research. Visiting lecturers who are currently working as researchers in these areas contribute to the course.

Preliminary reading
Tajfel, H. and Fraser, C., Introducing Social Psychology
Harmondsworth, Penguin, 1978

Textbook
Deutsch, M. and Hornstein, H.A., Applying Social Psychology
N.Y., Wiley, 1975

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
Bradburn, N.M., Sudman, S. et al., Improving interview method and questionnaire design, San Francisco, Jossey-Bass, 1979

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 analysis), rights and obligations 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

Textbooks

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.

The why, when, how, advantages and disadvantages of each technique are examined in graded assignments that involve using the computer to analyse the data. A major assignment requires students, when solving complex research problems, to discuss the models and assumptions relating to the statistical procedures considered.

Preliminary reading

Textbooks
Child, D., Essentials of Factor Analysis, N.Y., Holt, 1973

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-science based interventions and human-service programs; and the evaulation and assessment of these programs. The concentration is on theoretical formulations and signficant 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, Harmondsworth, 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 conceptions of small-group processes and developing skills for working in groups and conducting group interviews;
(iii) communicating in groups: instructions and practice in presenting information and ideas to groups and in using instructional technology, such as video.

Preliminary reading

AT456 Issues in Social Psychology
There are two components in this subject. The first is made up of two work placements which all students are required to complete. In order to be given a pass in the subject students must complete these two placements satisfactorily. The second component constitutes a review of conceptual and methodological issues in the practice of applied social psychology. These issues are considered in terms of their implications for the work of the social science practitioner. Students submit a review of a conceptual or methodological framework which is influential in contemporary applied social psychology.

Preliminary reading

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.
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

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.

Urban Sociology subject details

AT480 Advanced Urban Research

This subject is offered for those students who want more intensive first-hand training in research methods than that offered in AT484. Students are involved in the collection of data and coding of data and introduced to the SPSS (Statistical Package for the Social Sciences) and tabulation and analysis using the Swinburne computer facilities. For students undertaking an empirical analysis in their research projects or for students seeking employment as research officers, this subject provides necessary additional training in urban research.

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 policy areas 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.

AT484 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.

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

AT191 Applied Writing
AT294 Social Science 2
AT391 Applied Psychology
AT395 Applied Psychology
AT492 Theory of Communications

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 Formation

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:

- Applied psychology
- Law and society
- Writing and Interpersonal communication
- Writing for pleasure and with a purpose
- Technology and social change

Details of these and other possible electives are available from the Department of Liberal Studies.
Academic staff ........................................ BS2
Courses offered ...................................... BS3
Entrance requirements ............................. BS4
Standards of progress ............................... BS4
Undergraduate
— Degree of Bachelor of Business ............... BS5
— Degree conversion course ...................... BS6
— Diploma of Business (Accounting) ............. BS8
— Associate Diploma in Private Secretarial Practice BS9
Postgraduate
— Accounting ......................................... BS9
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— Corporate Finance ............................... BS11
— Management Systems ........................... BS12
— Organisation Behaviour ....................... BS13
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Faculty of Business

Dean
M.H. Hunter, BCom, MAAdrnin, DipEd, FASA

Academic Staff

Department of Accounting

Head
N.J. Allport, BCom, MBA, BEd, AASA(Sen)

Principal Lecturers
B.C. McDonald, BCom, DipEd, AASA
W.C. Nash, BCom, MBA, DipEd

Senior Lecturers
D.V. Hawkins, BCom, DipEd, AASA
I.A. McCormick, BCom, MAAdrnin, AASA
M.G. McDonald, BA, BEd
W.H. Platt, BCom, MAAdrnin, DipEd, AASA
B.W. Spurrell, BCom, BA, DipEd, AASA
I.R. Taylor, BEd, MBA, DipEd, AASA (Sen)

Lecturers
J.E. Andrews, BCom, ACA
R. Donkin, BBus(Acc), DipBusStuds(DP), DipMechEng, AASA(Prov), MACS, GradIEast
J.R. Gerrand, BEc, AASA
B.R. Graham, BEc, MAAdrnin
M. Haskin, BA, BCom, AASA(Sen)
P. Haslock, BEc(Hons), AASA(Sen)
T.R. Rowles, BEc(Hons), DipEd
D.G. Vinen, BEc, DipEd, ACA

Senior Tutors
M. Ann Johns, BBus, AASA(Sen)
Antoinette Richardson, BEc
Sheila Rodeck, BSc, BBus, DipEd, AASA

Department of Administration and Law

Head
W.T. White, BCom, MBA, FRMIT, FIM(Lond), AIMkgt

Senior Lecturers
R.M. Brown, BCom, MEd, AIBA, MACE
P.J. Pascoe, LLB, BCom, AASA
H. Zimmerman, BA(Hons), LLB, DipEd
L.A.J. Zimmerman, BCom, MBA

Lecturers
J.G. Batros, BSc, BA, TSTC
G.W. Bell, LLB, ACTT
C. Christodoulou, BAgSc, MSc, MAAdrnin
B.R. Clarke, LLB, BEc, GradDiplMkt
Sandra Edmonds, LLB
Barbara Evans, BAgrSc, MAAdrnin, GradIMA
L.J. Robertson, FRMIT, MBA
G. Watts, BCom, MBA, DipEd

Principal Tutor
Valerie J. Thomson, DipComPrac, TTTC

Senior Tutors
P. McIntosh, BJuris, LLB
D. Maddern, BS, MA, PhD

Department of Data Processing and Quantitative Methods

Head
R.W. Treloar, MSc, TSTC

Principal Lecturer
D.G. Adams, BCom, MAAdrnin, TSTC

Senior Lecturers
M.G. Nichols, MEc, MACE
W.D. Wilde, BCom

Lecturers
Kate Behan, BBus(Acc), DipBusStuds(DP), DipDramaProd, MACS
K. Bradshaw, BEc(Civil), BSc, MA
Diana Holmes, BCom, MACS
N.H. Kelly, BBus, AAII, MACS, AASA(Prov)
C. Leonard, BSc
G.A. Murphy, BCom, AASA
B. Thompson, BEc, TPTC, BEd

Senior Tutor
N. Beaumont, BSc(Hons), AACS, STC

Department of Economics

Head
B.N. Nichols, MEc, TPTC

Senior Lecturers
B.N. Oakman, BCom, MEc, DipEd
D.J. Thomas, PhD, MA

Lecturers
J.A. Chamberlain, MEc, DipEd
R.P. Crane, BEc, DipEd
M. Grant, BComm, DipEd
D.J. Owens, BEc(Hons), MAAdrnin
J.B. Wielgosz, BCom(Hons), MA, DipEd
P.O. Xavier, BEc(Hons), MA

Senior Tutors
Julie Gerstman, BA, BEc
## Courses offered in the Faculty of Business

<table>
<thead>
<tr>
<th>Course title</th>
<th>Length of course (Minimum)</th>
<th>Entrance requirements</th>
<th>Special comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>full-time</td>
<td>part-time</td>
<td></td>
</tr>
<tr>
<td>Associate Diploma of Private Secretarial Practice</td>
<td>2 years</td>
<td>_</td>
<td>For the degree course, it is advisable to have studied mathematics at Year 12 or equivalent.</td>
</tr>
<tr>
<td>Bachelor of Business</td>
<td>3 years</td>
<td>6 years</td>
<td>Four subjects (including English) at Year 12.</td>
</tr>
<tr>
<td>- Accounting</td>
<td>3 years</td>
<td>6 years</td>
<td>For the degree course, it is advisable to have studied mathematics at Year 12 or equivalent.</td>
</tr>
<tr>
<td>- Applied Economics</td>
<td>3 years</td>
<td>6 years</td>
<td>For the degree course, it is advisable to have studied mathematics at Year 12 or equivalent.</td>
</tr>
<tr>
<td>- Data Processing</td>
<td>3 years</td>
<td>6 years</td>
<td>For the degree course, it is advisable to have studied mathematics at Year 12 or equivalent.</td>
</tr>
<tr>
<td>Graduate Diploma</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>- In Accounting</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>- In Business Administration</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>- In Management Systems</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>- In Organisation Behaviour</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>- In Corporate Finance</td>
<td>_</td>
<td>2 years</td>
<td>An appropriate tertiary degree or diploma.</td>
</tr>
<tr>
<td>Degree Conversion Course</td>
<td>1½ years</td>
<td>Diploma of Business from a recognised Victorian institution</td>
<td>For diploma holders to convert to a degree.</td>
</tr>
</tbody>
</table>
Entrance requirements

The minimum entrance requirement for all undergraduate courses is the satisfactory completion of VISE 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 1 are given preference in the selection procedure.

A study of mathematics at least to 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 VISE 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 (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;
(c) part-time students will be expected to complete the requirements of the first (common) year of the diploma degree course within four years;
(d) further provisions apply in postgraduate courses (see these course descriptions in this handbook).

2 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.

3 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.

4 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 1982, Friday 17 April and Friday 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 (3) above, outlining the faculty expectations as to a standard enrolment per semester.

5 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.
6 Admission to examinations
Enrolment and satisfactory completion of prescribed assignment work, are normal prerequisites for admission to any final examination.

7 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.

8 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:

<table>
<thead>
<tr>
<th>Prize Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Australian Society of Accountants prizes</td>
<td>The best students in first, second, and third year accounting units.</td>
</tr>
<tr>
<td>The Economic Society of Australia and New Zealand prizes</td>
<td>The best student in first year economics, and the two best students in second and third year economics.</td>
</tr>
<tr>
<td>The Hungerford Hancock and Offner prize</td>
<td>The best student in advanced financial management.</td>
</tr>
<tr>
<td>The Australian Computer Society prize</td>
<td>The best student in final year data processing practical work.</td>
</tr>
<tr>
<td>The Datec prizes</td>
<td>The two best students in second year systems design.</td>
</tr>
<tr>
<td>The Arthur Andersen and Co. prize</td>
<td>The student with the best aggregate performance in Financial Management and Accounting Theory.</td>
</tr>
<tr>
<td>The Bill Hibble, Arthur Andersen and Co. prize</td>
<td>The best performance in a data processing programming unit.</td>
</tr>
<tr>
<td>The Touche Ross and Co. prize</td>
<td>The best performance in degree auditing.</td>
</tr>
<tr>
<td>The BP Australia prize</td>
<td>The best student in corporate accounting.</td>
</tr>
<tr>
<td>The Coopers and Lybrand prize</td>
<td>The best student in management and cost accounting.</td>
</tr>
<tr>
<td>Swinburne Graduate Society of Business Administration</td>
<td>Best overall student in the Graduate Diploma in Business Administration</td>
</tr>
<tr>
<td>The Mobil Oil Australia Prize</td>
<td>The best written presentation in Marketing Management 2</td>
</tr>
</tbody>
</table>

Bachelor of Business (BBus)
The degree course leading to the award of Bachelor of Business offers major studies in accounting, data processing or applied economics, 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, stockbroking 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.
Applied economics stream

Understanding the nature of the economic system is a fundamental requirement for a career in business, so economics is one of the core subjects studied in the common year of the Bachelor of Business course. More intensive studies in economics provide skills which can be applied in a variety of business vocations especially when complemented by appropriate supporting disciplines, such as marketing.

The applied economics course applies modern economic and marketing concepts and techniques to decision-making and planning in the business environment. It includes complementary studies in accounting and law.

During the course students develop the ability to analyse economic and consumer environments—this opens up a wide range of interesting and challenging careers in both private and public sectors.

Employment prospects include the following areas: marketing and advertising; economic analysis; e.g., monitoring economic conditions; market research for various sectors and industries, such as manufacturing, finance, food services. Scope for employment in these areas is considerable in the economics, marketing, planning and research areas of major organisations, such as banks, consulting firms, government and semi-government departments and authorities, and private corporations more generally.

Teaching methods adopted in this course emphasise group projects, case studies and the opportunity to work on relevant practical problems.

Degree course structure

The course comprises twenty-six units. Ten units are studied in the first or common year.

Sixteen units, ten of which are mandatory, are studied over the second and third years.

The three major streams are:

Accounting Data Processing 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)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS103</td>
<td>Accounting 1A (1 unit)</td>
</tr>
<tr>
<td>or</td>
<td>BS104 Accounting 1B (1 unit)</td>
</tr>
<tr>
<td>BS109</td>
<td>Accounting 1C (1 unit)</td>
</tr>
<tr>
<td>BS111</td>
<td>Economics 1 (2 units)</td>
</tr>
<tr>
<td>BS132</td>
<td>Administrative Studies (2 units)</td>
</tr>
<tr>
<td>BS121</td>
<td>Introduction to Data Processing (1 unit)</td>
</tr>
<tr>
<td>BS108</td>
<td>The Australian Legal System (1 unit)</td>
</tr>
<tr>
<td>SM145</td>
<td>Quantitative Analysis for Business (2 units)</td>
</tr>
</tbody>
</table>

Second and third degree years

Full-time students will study four units each semester for four semesters; part-time students, two units each semester for eight semesters.

The mandatory units are listed in their usual order of completion.

Mandatory units (10)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS210</td>
<td>Management and Cost Accounting (2 units)</td>
</tr>
<tr>
<td>BS506</td>
<td>Contract Law</td>
</tr>
<tr>
<td>BS241</td>
<td>Fundamentals of Operations Research</td>
</tr>
<tr>
<td>BS201</td>
<td>Corporate Accounting</td>
</tr>
<tr>
<td>BS207</td>
<td>Law of Business Organisations</td>
</tr>
<tr>
<td>BS306</td>
<td>Taxation</td>
</tr>
<tr>
<td>BS301</td>
<td>Financial Management</td>
</tr>
<tr>
<td>BS328</td>
<td>Information Systems Analysis</td>
</tr>
<tr>
<td>BS300</td>
<td>Accounting Theory</td>
</tr>
<tr>
<td>BS225</td>
<td>Commercial Programming A</td>
</tr>
<tr>
<td>BS210</td>
<td>Management and Cost Accounting (2 units)</td>
</tr>
<tr>
<td>BS226</td>
<td>Commercial Programming B</td>
</tr>
<tr>
<td>BS227</td>
<td>Systems Design A</td>
</tr>
<tr>
<td>BS232</td>
<td>Systems Design B</td>
</tr>
<tr>
<td>BS328</td>
<td>Information Systems Analysis</td>
</tr>
<tr>
<td>BS329</td>
<td>Systems Software A</td>
</tr>
<tr>
<td>BS330</td>
<td>Systems Software B</td>
</tr>
<tr>
<td>BS324</td>
<td>Management Information Systems</td>
</tr>
</tbody>
</table>

Applied Economics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS211</td>
<td>Managerial Economic Analysis</td>
</tr>
<tr>
<td>BS231</td>
<td>Marketing 1</td>
</tr>
<tr>
<td>BS216</td>
<td>Accounting for Marketing 1</td>
</tr>
<tr>
<td>BS213</td>
<td>Industry and Government</td>
</tr>
<tr>
<td>BS217</td>
<td>Accounting for Marketing 2</td>
</tr>
<tr>
<td>BS232</td>
<td>Marketing 2</td>
</tr>
<tr>
<td>BS215</td>
<td>Economic Techniques for Business</td>
</tr>
<tr>
<td>BS333</td>
<td>Marketing 3</td>
</tr>
<tr>
<td>BS234</td>
<td>Marketing and the Law</td>
</tr>
<tr>
<td>BS312</td>
<td>Economic Research</td>
</tr>
</tbody>
</table>

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.
Disciplines and unit codes

**Accounting**
- BS103 Accounting 1A or BS104 Accounting 1B (1 unit)
- BS109 Accounting 1C (1 unit)
- BS201 Corporate Accounting
- BS210 Management and Cost Accounting (2 units)
- BS214 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
- BS405 Advanced Auditing
- BS406 Advanced Taxation

**Applied Economics**
- BS111 Economics 1 (2 units)
- BS211 Managerial Economic Analysis
- BS213 Industry and Government
- BS214 Industrial Relations
- BS215 Economic Techniques for Business
- BS311 Public Finance
- BS312 Economic Research
- BS315 Monetary Economics
- BS318 Urban Economics
- BS319 International Economics

**Business Environment**
- BS312 Administrative Studies 1 (2 units)
- BS331 Marketing 1
- BS332 Marketing 2
- BS334 Marketing and the Law
- BS335 Organisational Behaviour
- BS336 Business cases
- BS337 Marketing 3
- BS338 Industrial and Legal Aspects of Marketing

**Law**
- BS108 Australian Legal Systems
- BS206 Contract Law
- BS207 Law of Business Organisations
- BS208 Industrial Law
- BS209 Legal Aspects of Commercial Paper
- BS306 Advanced Company Law
- BS309 Law of International Trade

**Data Processing**
- BS121 Introduction to Data Processing
- BS225 Commercial Programming A
- BS243 Computer Programming and Packages
- BS248 Information Systems Analysis
- BS256 Commercial Programming B
- BS257 Systems Design A
- BS258 Systems Design B
- BS324 Management Information Systems
- BS329 Systems Software A
- BS330 Systems Software B

**Quantitative**
- SM145 Quantitative Analysis for Business (2 units)
- SM221 Applied Statistics 1
- SM222 Applied Statistics 2
- BS241 Fundamentals of Operations Research
- BS242 Linear Programming
- BS244 Business Forecasting

The number of units offered each year is governed by demand and the availability of appropriate staff.

**Professional institutes**

**Australian Society of Accountants**

**Accounting stream**
To be eligible for provisional membership of the Australian Society of Accountants, satisfactory completion of the mandatory units is sufficient.

For associate membership
Mandatory units plus Auditing

**Data Processing and Applied Economics streams**
For provisional membership
Mandatory units plus Auditing

**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 Auditing

**Institute of Chartered Secretaries and Administrators**

**Accounting stream**

**Australian Computer Society**

**Data Processing stream**
Graduates are eligible for membership of this society. Other graduates may qualify for membership by choosing appropriate data processing electives.

**Institute of Chartered Secretaries and Administrators**

**Accounting stream**

**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 Contract Law Corporate accounting Law of business organisations Financial management Accounting theory Managerial economic analysis
Bachelor of Business conversion course

This is a three-semester (1½ year) part-time course for students who have completed the diploma of business course and wish to qualify for a degree. They will be selected on the basis of their diploma results together with a recommendation from the awarding college or institute.

Students who have prior qualifications to the Diploma of Business such as the Diploma of Commerce or the Accountancy Certificate, should upgrade this qualification to the equivalent of the Diploma of Business (Accounting) at an institution other than Swinburne before applying for entry to the degree conversion course.

Course structure

The course comprises six units taken (two per semester) over three semesters. A unit involves four hours per week each semester, in the form of either lectures or classes. Units will be selected from those offered for the degree course.

Each student's program is planned individually at the time of enrolment and the course is flexible enough to cater for a wide variety of choice of subject matter.

Provisions

(1) Students are required to take six units but will be precluded from attempting any units, the subject matter of which has been substantially covered in any previous course.

(2) This provision must be fulfilled before the final semester of the conversion course is undertaken.

Diploma of Business (Accounting) students must pass at least one of the following units:

- BS302 Advanced Financial Management
- BS300 Accounting Theory
- BS310 Budgeting

Diploma of Business (EDP) students must pass at least one of the following units:

- BS329 Systems Software A
- BS330 Systems Software II
- 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)

1977 revised syllabus
(For students enrolled for first year in 1977 or later)
Total number of units = twenty-five.

First year (Common year)

- BS103 Accounting A (1 unit) or
- BS104 Accounting B (1 unit)
- BS109 Accounting C (1 unit)
- BS111 Economics I (2 units)
- BS132 Administrative Studies I (2 units)
- BS121 Introduction to Data Processing (1 unit)
- BS106 The Australian Legal System (1 unit)
- SM145 Quantitative Analysis for Business (2 units)

Second year

- BS251 Accounting 2A
- BS262 Accounting 2B
- BS261 Economics 2
- BS255 Commercial Law (1 unit)

Third year

- BS351 Contemporary Accounting Problems
- BS352 Analysis and Interpretation
- Accounting 3B (2 units)
- BS353 Capital Budgeting
- BS354 Advanced Cost Accounting
- Accounting 3C (2 units)
- BS355 Auditing
- BS356 Taxation Law

*Plus two electives from*

- BS274 Introduction to Operations Research
- BS276 Computer Programming
- BS367 Economic Policy
- BS379 Business Systems
- BS381 Behaviour in Organisations
- BS383 Marketing
- BS384 Law of Business Entities

*The number of elective units offered each year is governed by demand and the availability of appropriate staff.

Pre-1977 diploma enrolments

Students who began diploma studies prior to 1977 should check previous handbooks or consult with course advisers regarding the course requirements.

Professional institutes

Diplomates are eligible to apply for admission to The Australian Society of Accountants, or to the professional year of the Institute of Chartered Accountants.
Associate Diploma in Private Secretarial Practice

First year
BS191 Private Secretarial Practice A (full year programs)
BS111 Economics 1 (each 2 units)
BS132 Administrative Studies 1
BS112 Data Processing—S (1 unit)
AT205 Business Communications (1 unit)

Second year
BS291 Private Secretarial Practice B (2 units)
BS281 Human Behaviour in Organisations (1 unit)
BS282 Secretarial Administration (1 unit)
BS110 Legal Studies (1 unit)
BS255 Commercial Law (1 unit)
BS102 Accounting 1S (2 units)

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 inter-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 in 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. BS551 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 remainder of Group 1 are designed to enable students to pursue further studies in these areas.

All Group 1 units are designed to encourage students to master the application of concepts to practical situations. This is achieved by means of a large practical assignment in each Group 1 unit as a part of the students’ assessment.

The range of units in other disciplines listed in Group 2 enables students to develop a greater awareness of the inter-relationship 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 BS751 must submit a research paper in the semester following completion of the course work, although an extension of one other semester may be allowed. Students who are granted an extension are required to re-enrol within three weeks of the commencement of the following semester to confirm their candidature, otherwise a fail will be recorded.

Any student who has failed to submit a research paper of the required standard within the specified time, may apply to have the research paper topic reconsidered. If the topic is approved the student will be permitted to re-enrol in the unit.

Professional institutes

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

BS457 Introduction to Financial Management
BS461 Economics
BS581 Administration of Organisational Systems
BS594 Quantitative Methods
BS595 Marketing Management

Second year

BS582 Administration of Human Resources
BS552 Financial Structures and Policy
BS587 Business Policy
BS596 Marketing Management

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 and 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 1982:
BS651 Current Issues in Accounting
BS653 Auditing and EDP
BS654 Contemporary Auditing
BS655 Corporate Taxation
BS656 Taxation Planning
BS659 Investment Analysis
BS463 Current Issues in Economics
BS464 Australian Industrial Relations
BS467 Systems Analysis
BS477 Management Systems
BS585 Secretarial Practice and Procedures
BS586 Personnel and General Administration
BS591 Quantitative Methods in Accounting

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
BS752 Corporate Financial Management 1
BS662 Financial Institutions and Markets
Semester 2
BS753 Corporate Financial Management 2
BS684 Legal Aspects of Finance

Second year
Semester 1
BS754 Investment Management
BS571 Quantitative Methods in Finance
Semester 2
BS663 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.

The following should be read in conjunction with paragraph 1(d) of the requirements as a provision applying to Graduate Diploma in Corporate Finance students:

‘At least one unit must be passed each semester until all course work is completed, unless a deferment of study is sought and approved.’

Time-table
Sessions for both first and second year units have been organized 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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>BS472</td>
<td>Systems Analysis</td>
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<tr>
<td>BS473</td>
<td>Commercial Systems Design</td>
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<tr>
<td>BS474</td>
<td>Current Issues in Systems Design</td>
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<tr>
<td>BS475</td>
<td>Systems Project Management</td>
</tr>
<tr>
<td>BS476</td>
<td>Operations Management</td>
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<tr>
<td>BS477</td>
<td>Management Systems</td>
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</tbody>
</table>

**Group 2**
Students must take one pair of units from this section

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>BS588</td>
<td>Administrative Policy combination with either</td>
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<tr>
<td>BS589</td>
<td>Management Organisation and People</td>
</tr>
<tr>
<td>BS590</td>
<td>Marketing Administration 1</td>
</tr>
<tr>
<td>BS591</td>
<td>Personnel and General Administration</td>
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<tr>
<td>BS592</td>
<td>Administration of Organizational Systems</td>
</tr>
<tr>
<td>BS593</td>
<td>Marketing Administration 2</td>
</tr>
<tr>
<td>BS594</td>
<td>Marketing Administration 3</td>
</tr>
<tr>
<td>BS595</td>
<td>Introduction to Financial Management</td>
</tr>
<tr>
<td>BS596</td>
<td>Financial Structures and Policy</td>
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<tr>
<td>BS597</td>
<td>Administration of Organisational Systems</td>
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<tr>
<td>BS598</td>
<td>Administration of Human Resources</td>
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<tr>
<td>BS599</td>
<td>Current Issues in Accounting</td>
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<tr>
<td>BS600</td>
<td>Profit Planning and Control</td>
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<tr>
<td>BS601</td>
<td>Quantitative Methods in Accounting</td>
</tr>
<tr>
<td>BS602</td>
<td>Quantitative Approaches to Financial Policy</td>
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</tbody>
</table>


Group 3
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.

Candidates have certain flexibility in selecting a combination of units which meet their individual requirements.

Any unit not chosen in Group 2 plus
BS463 Current Issues in Economics
BS464 Australian Industrial Relations
BS535 Secretarial Practice and Procedures
BS644 Contemporary Auditing
BS665 Corporate Taxation
BS666 Tax Planning
BS670 Investment Analysis
BS676 Systems Development Project (2 units)

*Only students with two Group 1 preclusions and above average results in the first year may elect to take BS676 Systems Development Project.

The number of units offered each year is governed by demand and the availability of appropriate staff.

Preclusions
Students with prior training and/or experience in Data Processing may be precluded from Systems Design and/or Commercial Systems Design. This is decided in consultation with staff members when the student is admitted to the course.

Other preclusions from Group 1 units usually do not apply. For each preclusion, students study an elective unit from Group 3. Students may also be precluded from taking Group 2 and 3 units which they have covered prior study.

Extension seminars
In addition to normal class contact each student is required to attend six three-hour seminars each year of the course. The aim of the seminar program is to present the latest developments and trends in the data processing industry.

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

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<thead>
<tr>
<th>Code</th>
<th>Name</th>
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<tbody>
<tr>
<td>AT693</td>
<td>Psychology and Interpersonal Skills</td>
</tr>
<tr>
<td>BS651</td>
<td>The Organisation</td>
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Both these units run for the whole academic year and have a total class time commitment of 5 hours per week.

Year two

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
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</thead>
<tbody>
<tr>
<td>BS652</td>
<td>Managing Conflict and Change in Organisations</td>
</tr>
<tr>
<td>BS683</td>
<td>Management and Leadership in Organisations</td>
</tr>
</tbody>
</table>

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.
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;
- data processing — recording techniques and preparation;
- office accounting techniques and controls, payroll preparation, asset valuations (book and tax records), inventory control relationships to computer systems;
- accounting for different forms of ownership — sole proprietorships, partnerships, companies, manufacturers, contractors and service performers;
- interpretation of the balance sheet.

Recommended reading
Goldberg, L. and Hill, V.R. Elements of Accounting, Melbourne, Melbourne University Press, 1973
Johnson, M.A. Introduction to Accounting, 4th edn, Sydney, Australasian Publishing Co., 1973
Mahoney, D.J., Berger, P. and Wolff, A.V. Century 21 Accounting Australian edn, Sydney, Ashton and South Western, 1977

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 partners’ equity and shareholders equity.

References
Duffy, L. and Monro, I. Introductory Accounting Principles and Practice, Melbourne, Longman Cheshire, 1977
Goldberg, L. and Hill, V.R. Elements of Accounting, Carlton, Melbourne University Press, 1973

Textbook

BS104  Accounting 1B
Prerequisite, a result of ‘C’ or better in HSC Accounting or equivalent experience
The objective 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 BS103 — 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 an 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 an awareness of the role and limitations of the non-court tribunals and commercial arbitrators as alternatives to the court system;
- to create an 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,
Legal Resources Book
Your Rights. Melb., Vic, Council for Civil Liberties, 1980

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 an awareness of the influence of the judiciary in the law-making function and in so doing to detail areas of substantive law.

References
Bates, N. An Introduction to Legal Studies. 3rd edn, Syd., Butterworths, 1979
Legal Resources Book
Your Rights. Melb., Vic, Council for Civil Liberties, 1980

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

BS112 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 layout appropriate for specifying output reports, card input and sequential magnetic files,
- program logic design using pseudocode and coding in COBOL to the level of group reporting from a sequential file,
- input and output devices.
- Introduction to systems analysis and design with emphasis on formalising problems and determining system requirements;
- a survey of the possible uses of computers in business, industry, government and the home.

The theory taught in these topics is substantiated by extensive practical work. Students are expected to complete a case study satisfactorily which includes determining objectives, preparing a program specification, and successfully executing this program using live data.

Textbooks
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
Rydges
Conover, R.J. Data Processing with Applications. Reston, Va., 1978

BS132  Administrative Studies 1
In this unit, the student is introduced to the basic knowledge relating to administrative theory. Students should develop an appreciation of the problems and functions of management, together with a conceptual context in which to synthesise the other subjects studied in the business courses. Emphasis is on those aspects of the behavioural sciences which are relevant to administration, and on the development of the students’ perceptions of themselves as organisation members as well as functional specialists.

The following themes are developed:

- the nature and complexity of organisations and their environments;
- managing human 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 role of conceptual models, especially the Open System model for problem-solving.

References

Textbook

BS191  Private Secretarial Practice A
Prerequisite: nil
A first year subject designed to introduce the skills of shorthand and typing 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 100 wpm respectively, on restricted matter, are required.

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 four hours per week for two semesters. For students with an appropriate mathematics background, the average time allocation is three hours per week for two semesters.

The primary purpose of this subject is to bring all students up to a higher level of numeracy and to develop a method of approach which they will be able to apply in subsequent areas of their courses. In doing this, the unit will provide students with a knowledge of particular techniques in mathematics and statistics so that they may achieve a greater understanding of the quantitative procedures applied in various disciplines to 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 includes inventory, Markov chains, decision theory, input-output analysis, sampling techniques, quality control, and tests of hypotheses.

References

BS201  Corporate Accounting
Prerequisite: BS109 Accounting IC

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 placed on 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, take-overs, pooling of interests, and group accounts. The resultant accounting, organisational and legal effects of these alternative arrangements are 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
Bowen, R.L. and Clarke, F.L., eds. Holding Companies and Group Accounts. 6th edn, Sydney, Butterworths, 1973
Cade’s Book to Australian Company Law 3rd edn, North Ryde, CCH, 1976
Sim, R.S. and Mason, H.H. Casebook on Australian Company Law Syd., Butterworths, 1972
Victorian Companies Act and Regulations. CCH Australia (Latest edition)

BS206  Contract Law
Prerequisite: BS108 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
...
References

Caffrey, B.A. Guidebook to Contract Law in Australia. 1st edn, Syd., CCH Australia Ltd., 1980
Guest, A.G. Chitty on Contracts. 24th edn, Lond., Sweet and Maxwell, 1977
Goods Act 1958 (Victoria)
Trade Practices Act 1974 (Commonwealth)
Bills of Exchange Act 1909 (Commonwealth)

Textbook


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 and unincorporated associations.

Prescribed texts

Companies Act 1961
Partnership Act 1958
Trustee Act 1958

References


BS208 Industrial Law

The general objective is to analyse the impact of law upon the employment relationship between employer and employee.
The contract of employment will form the core of study. Upon this foundation a number of areas are studied in depth, including the following:
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 dismissals, and employment related injuries as factors contributing to a temporary or permanent cessation of work.

References


Guidebook to Australian Industrial Law. 2nd edn, Syd., CCH Australia Limited, 1981
Guidebook to Workers Compensation. 2nd edn, Syd., CCH Australia Limited, 1980

BS209 Legal Aspects of Commercial Paper

Students enrolled in this unit will be expected to have passed BS206 Contract Law.
The intention is to extend and develop the principles of contract by canvassing such areas as the financing of contractual obligations, the alternative methods of securing such financing and the ensuring 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)
Money Lenders Act 1958 (Victoria)
Hire-purchase Act 1959 (Victoria)

BS210 Management and Cost Accounting

Prerequisite, BS109 Accounting 1C
A mandatory second year degree subject for both accounting and data processing streams
Recent developments in management science, micro-economics, finance, decision theory, statistics and organisation theory have concurrently created both a greater demand on the management accountant to provide data for a range of management decisions, while simultaneously providing many of the tools to fulfill this enlarged role.
This unit is designed to provide students with a concise, broadly based approach to management accounting.
Synthesising modern management accounting topics examining both rationale and method;
Integrating management accounting with other related disciplines;
stressing the design, testing and operation of systems for organisational planning, control and evaluation and the implications of such systems on employee motivation and behaviour.
The course consists of the following:

Part A Cost measurement systems

The scope of management and cost accounting: an introduction to the measurement function of cost accounting, job and process costing systems; the allocation problem and a consideration of what costs should be treated as product costs; variable costing and absorption costing, their impact on inventory valuation and income measurement.
Part B  Cost control systems

The nature of control systems; responsibility accounting; cost prediction and its role in the control process; the master budget and its role in the planning and control process; standard costing — a dual system for valuing inventories and controlling costs; variance analysis under both absorption and variable costing; flexible budgeting for overhead cost control; behavioural consideration in setting standards and evaluating performance.

Part C  Costs for planning and decision-making

Introduction to decision-making; short-run and long-run decisions under conditions of certainty and uncertainty; decision models and their applications; behavioural aspects of decision-making.

Part D  Performance evaluation

Management reports for marketing and non-manufacturing management; segment reporting and profit variance analysis; decentralization and divisional performance evaluation; transfer pricing and its impact on divisional performance evaluation and resource allocation.

Prescribed text
To be advised.

References
Benston, G.J., ed. Contemporary Cost Accounting and Control, 2nd edn, Belmont, California, Dickenson, 1977
Solomons, D. Divisional Performance and Control, Homewood, Irwin, 1968

BS211  Managerial Economic Analysis

Prerequisite: BS111 Economics 1

Students who are contemplating major studies in economics should include this unit as well as BS113 Industry and Government in their courses.

This unit shows how economic analysis can be applied to assist decision-making. Empirical studies are used as a means of illustration. The unit deals with the following topics: demand analysis; demand theory, empirical demand studies including forecasting; production and cost analysis (opportunity cost, short-run and long-run production and cost curves); profit, and goals of firms; pricing policies of firms and public utilities.

References

BS213  Industry and Government

Prerequisite: BS111 Economics 1

Students who are contemplating major studies in economics should include this unit as well as BS113 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.

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. Emphasis is given to the analysis and interpretation of data, and to the use of mathematical models and economic and statistical indicators — Australian national accounts, index numbers, production, demographic and financial data, business cycles, economic models 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

The unit is designed to:

- introduce students to the process of cost determination and control;
- enable students to analyse cost behaviour and relate it to different decision-making techniques.

The unit includes:

- the analysis of cost; cost behaviour patterns — fixed, variable, semi-variable; cost/volume/profit analysis — break-even, margin of safety, operating leverage; determining the cost of production under both absorption costing and direct costing; determining the cost of research and development, marketing, and administration; assessing the effectiveness of such expenditures; cost control techniques; calculating the total cost of a product.
References

BS217 Accounting for Marketing 2
Prerequisite: BS216 Accounting for Marketing 1
This unit is designed,
to focus attention on the impact on profitability of various marketing decisions;
to provide an analytical framework to enable correct evaluation of various marketing policy decisions;
to make students aware of the interrelation between marketing and capital investment.
The unit includes:
evaluation of total profitability using the return of investment model;
evaluation of alternative marketing and production strategies, viz., market research; make or buy; distribution channels; sub-contracting, margin management and pricing; deletion of existing product/service; new product introduction;
sales analysis to assist marketing decisions reporting segment contributions and profits by product, area, channel of distribution.
Cost allocations;
working capital management — effect of sales and production on levels of stock, debtors, and costs.

References
Beyer, R. Profitability Accounting for Planning and Control. N.Y., Ronald Press, 1963

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 ANSI COBOL language facilities are covered in some depth, and exchange between the major programming assignments will be written using COBOL, other industry-accepted commercial languages are also examined and compared. These include BASIC, RPG/1, and PL/1.
The following topics are covered:
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.
Programming aids e.g. pseudocode and structure charts.
Documentation, Program structure, Program design for implementation and maintenance,
program writing techniques, The economics of efficiency, 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

BS226 Commercial Programming B
Prerequisite: BS225 Commercial Programming A or BS221 COBOL Programming 1
A thorough knowledge of basic programming techniques and an elementary understanding of the COBOL programming language is presumed. Upon completion of this unit, the student will have experienced many aspects of program development and programmer responsibility, in a simulated working environment. Special emphasis is placed on the application of improved programming productivity techniques.
A selection of the following topics is treated by lecture, research assignment, or programming project:
structured programming; top-down development; development support libraries; team operations; structured walkthroughs; program documentation aids and standards; program estimating; program testing and debugging; direct access file manipulation; advanced COBOL facilities, such as SORT and Report Writer;
comparative commercial programming languages, query languages and other special purpose languages, job control language and utility program functions. Introduction to computer operations.
Students form programming teams for major projects, with the lecturer adopting the role of chief programmer, or consultant.
Industry supplied system specifications for actual commercial applications are used whenever possible as the basis for these projects.

References
Appropriate manuals from computer manufacturers.
Relevant industry journals.

BS227 Systems Design A
Prerequisite: BS121 Introduction to Data Processing
Students who complete this unit successfully will be able to prepare fully documented design solutions for simple systems. After a brief review of the analysis stage of system development, design topics are progressively related to the development of complete, working systems.
The major topics are as follows:
development of information systems, including the place of systems design in the development cycle, and the constraints and resources of a data processing system;
defining the system, which looks at the tasks of the systems analyst in establishing a functional specification document;
computer hardware and software, including all common I/O devices, system, utility and applications software, and typical commercial configurations;
system input and output design, including data capture, coding systems and forms design;
introduction to file design, including data analysis, data structure and file classifications;
system flow, which introduces typical processing tasks and run controls via a complete, documented system;
documentation systems, covering major methods in use;
file organization and processing, including simple file calculations, the characteristics and selection of major access methods, and an introduction to data base;
run timing, its relevance, limitations and simple methods;
system controls and security, including problem sources, some hardware, software and people controls, backup and recovery, and an introduction to EDP auditing;
introduction to implementation, including levels of testing, the interface to operations, and maintenance.

Textbook
Thierauer, R.J. and Reynolds, G.W. Systems Analysis and Design — A Case Study Approach Columbus, Ohio, Charles E. Merrill, 1980

References
Relevant material will be discussed for each lecture.
BS231 Marketing 1
Prerequisite, nil
Marketing 1 and 2 deal with the fundamentals of business planning with particular emphasis on the market place. The subject has been designed to provide students with an opportunity to relate their knowledge obtained in other disciplines to business situations.

Objective
To give students a broad understanding of the marketing environment and an overview of the total business function in particular with respect to planning and decision-making;
to enable students to apply their knowledge of accounting techniques, economics and quantitative methods to business decisions;
to increase the practicality of business education by introducing students to business situations. To achieve this, emphasis is on case study analysis and management games;
Marketing 1 deals with the fundamentals of marketing and consumer behaviour. The course provides for a broad understanding of marketing problems and introduces students to the techniques of dealing with such problems.

Syllabus
The marketing concept — an understanding of the interaction between the firm and its environment. The market and an analysis of demand — consumer behaviour, consumption and expenditure patterns; the buying process; market segmentation. The marketing mix — product, pricing, distribution and promotion decisions

Method of instruction
In a course of this nature active participation is essential. The theoretical aspects of marketing are supplemented by practical problems through the use of case studies. Students are required to submit group as well as individual assignments.

Degree conversion students who wish to major in the business environment are advised to undertake the marketing unit before attempting business cases. Moreover, it is recommended they include BS302 Advanced Financial Management.

Reference

BS232 Marketing 2
Prerequisite; student enrolled for this unit should have passed BS231 Marketing 1

Objectives
In this unit students study the marketing environment and the elements of the marketing mix in greater depth. The general objective of Marketing 2 is to provide students with a practical understanding of what marketing research is, what kinds of information it can provide and how it is used by management as an information source for marketing and financial decision-making.

Framework
Assessment of marketing opportunities, to develop an understanding of how demand is analysed and studies of market segmentation, market potential, market share and sales analysis; description of methods of sales forecasting and how and when they are used; marketing research, problem definition, the use of primary and secondary data, research design, sampling methods and survey methods, questionnaire design, analysis and interpretation of data.

Means of achieving objectives
Emphasis is on applying the above concepts to CASE studies and management games. Students are required to participate actively in an actual research project.

References

BS234 Marketing and the Law
Prerequisite, BS231
The unit involves an examination of the legal controls imposed on the manufacturing, marketing, distribution and financing of consumer goods including an examination of the Trade Practices Act 1974/7.

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 Affair Act 1972 (Vic.)
Trade Practices Act 1974/7 (Cwlth)

References
An Introduction to Trade Practices and Consumer Protection in Australia. C.GH Australia Ltd, 1977

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 inter-relationships 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 of stages of solution. Areas of study will include:
the general problem of resource allocation with emphasis on linear programming including a study of duality, 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 forecasting; 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 packages from the Faculty of Business optimisation library.

Preliminary reading

References
A detailed list of references is made available during the course.

BS242 Linear Programming
Prerequisite, BS241 Fundamentals of Operations Research or equivalent
In this unit, the application of linear programming within the context of realistic business and economic problems is examined generally. The emphasis is on formulation and the interpretation and analysis of results.

Topics covered build on the principles developed in BS241 and include: duality, its applications and economic significance; post-optimality and parametric analysis with consideration being given to variations in prices, costs, resources, demands and outputs; solution of problems involving choices of production processes and fixed charges; consideration of situations where some or all variables are disallow.
Consideration is given to specific industry problems in areas such as capital budgeting, sequencing and scheduling.

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: BS21 Introduction to Data Processing

The purpose of this unit is to bring students up to the stage where they can recognize the benefit of, and use a computer to assist in the solution of, business problems.

The emphasis on interactive computing Application areas are directed towards topics covered in other degree courses.

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 specializing, 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 of this unit is to provide students with:

- an awareness of the various forecasting techniques and their appropriate areas of applicability,
- experience in their application, including the use of packages in areas such as economics, marketing, accounting and finance.

Case studies will form an integral part of the course and use is made of packages and published forecast data.

Course content includes:

- an overview of forecasting methods, their general areas of application and criteria for selection of procedures, including cost-benefit analysis,
- extrapolation methods — time series analysis for both short and long term forecasting. Analysis of trend, seasonal and cyclical factors. Identification of appropriate areas of application;
- causal models — the use of linear regression models. The appropriate areas of application and the need for cost-benefit appraisal before undertaking;
- forecasting and use of input-output analysis. Construction of input output tables and production of a system. Relationship between the individual firm and national statistics; use of leading indicators;
- qualitative procedures — including the role of market research, delphi methods, consensus etc. in predicting future behaviour.

References
Firth, M. Forecasting Methods in Business and Management. Ldon., Arnold, 1977

**SM221 Applied Statistics 1**

Prerequisite: 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: designs for comparing two populations; hypothesis testing using parametric and non-parametric methods.
- Product leading; regression: linear regression model, coefficient of determination, prediction and forecasting; multiple regression model.

References
Miller, S. Experimental Design and Statistics. London, Methuen, 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 relevance of statistical analysis of commercial production, sales, and marketing of goods and services.


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 OS/BUS — an introduction to the handling Australian census data, official statistics — nature and use of government statistics. Use of small area statistics in retail planning. Current economic and social indicators, measurement of population and population change.

Preparation of a demographic profile for local areas.

Faculty of Business
Diploma subjects/units

**BS251** Accounting 2A
Prerequisite: BS109 Accounting 1C
A second year subject in the accounting diploma course. This deals with the formation, growth and termination of partnerships and companies with the major emphasis on companies.
The course of study embraces the accounting and legal aspects of partnerships; trusts; company formation; creation and disposal of surpluses available for distribution; presentation of company reports; reconstruction of share capital; business combinations; group accounting; company liquidations.

**References**
Australian Society of Accountants: Members' Handbook
Mason, H.H. and O'Hair, J.S. Australian Company Law 2nd edn, Mcqaw-Hill, 1973 or
Coles, Book to Australian Company Law 3rd edn, North Ryde, CCH, 1976
Sim, R.S. and Mason, H.H. Casebook on Australian Company Law, Syd., Butterworths, 1972
Victorian Companies Act and Regulations, CCH Australia (latest edition)

Students should not purchase any books before the first lecture.

**BS255** Commercial Law
Prerequisite: BS106 The Australian Legal System
This unit deals with principles of contract and negotiable instruments as examples of the impact of the law on the operation and financing of commercial dealings.

**References**

**BS261** Economics 2
Prerequisite: BS111 Economics 1
The purpose of this unit is to show how economic analysis can be used in decision-making and the provision of frameworks for microeconomic policy discussion of the Australian economic environment.

**References**
Davies, J. and Hughes, S. Managerial Economics. Plymouth, McDonald and Evans, 1979

**BS274** Introduction to Operations Research
Prerequisites: usually all first year units should have been passed
A second year unit of the diploma course in accounting. It provides an introduction to some of the common operations research techniques with which the modern accountant is likely to be concerned. Emphasis is on the use of microeconomic policy discussion of the Australian economic environment.

**BS276** Computer Programming
Prerequisite, BS211 Introduction to Data Processing
This unit gives students a broad understanding of programming techniques and programming languages, and extends the knowledge of the fundamentals of program structures, high level languages, and basic computer concepts which were introduced in the prerequisite unit.

**References**

*The following topics are covered:*
- language features. Form of the language, program layout, data types, arithmetic instructions, input and output instructions, conditional and loop instructions, editing and data manipulation.*
program development techniques. The stages leading from the system specification to the coding activity, problem analysis, programming aids e.g. pseudocode and lowcharting, documentation, program structure, program design for implementation and maintenance, program testing and debugging. Major programming assignments approach realistic commercial complexity, and include the areas of: group-reporting, table-handling, sequential file-updating.

References

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 or arising from human behaviour in business organisations. The teaching method will be based on a combination of lectures, case-studies and class discussions. Where appropriate, structured experiences will be employed to facilitate the learning of theoretical concepts and transfer of learning into the workplace.

Topics include: personality theory; values and values classification; learning, perception, motivation; role theory; group dynamics and interaction theory; interpersonal communications and perception; conflict and conflict management; change and the resistance to change; the effects of organisation structures on human behaviour; organisation development (OD).

Textbook

BS282 Administrative Studies 2
(Secretarial Administration)
This one-semester unit provides potential private secretaries with an understanding of:
- the nature, objectives and characteristics of the business organisation and its environment;
- the functional activities of, and problems associated with, the general, financial, personnel, production, marketing and data processing managers and the company secretary.

The teaching method is based on a combination of lectures, case-studies, tutorial papers and class discussions. Particular attention is given to the duties of a secretary in each of the above areas.

Recommended reading

BS291 Private Secretarial Practice B
Prerequisite: BS191 Private Secretarial Practice A
A second year unit in which more advanced practical application of the stenographic skills is made. Shorthand and typing speeds of 110 w.p.m. respectively are required for a pass, together with corresponding stenography ability. Assignments given on secretarial knowledge and duties.

Textbook
Complete list 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 within the business structure.

Textbooks
Lists 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 for 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 Concept. Lancaster, University of Lancaster, International Centre for Research in Accounting, 1975
(Students intending to study BS304 Advanced Financial Accounting subsequently should purchase this.)
Hendriksen, E.S. Accounting Theory. 3rd edn, Homewood, Ill., Richard D. Irwin, 1977
Sterling, R.K., 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 interaction 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.

Textbooks

References

BS302 Advanced Financial Management

Business financial theory and practice are examined as a means of evaluating the firm's investment, financing, and dividend decisions. Analytical techniques for a variety of financial decisions are considered and the role of subjective factors in the analysis is stressed.

The principles of capital budgeting are developed and the cost of capital is derived with consideration for the theory of capital structure and the impact of dividends on valuation. Debt policy and leasing are considered in relation to the acquisition of long-term assets and the cost of capital.

The evaluation of the financial decisions of the firm in relation to their effect on its value is considered in a firm risk and overall market portfolio context. Theoretical as well as practical implications of analysing risk in this manner are discussed.

References
Harvard Business Review, Finance Series
Harvard Business Review, Capital Investment Series

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 object is 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 made objective. Emphasis is given to the distinction between the descriptive (what is), and the normative/prescriptive (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 emphasises the necessary interrelationships between these topics. Similarly tutorials are used to provide the link between the theoretical and practical aspects of auditing. Consequently, tutors 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 interim 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.

References
CCH Australia Limited Victorian Companies Act and Regulations, latest edition
Mautz, R.K. and Sharaf, H.A. The Philosophy of Auditing. Iowa City, American Accounting Association 1961

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 are the nature of assessable income, allowable deductions and the provisions relating to companies, partnerships, trusts, primary producers and international taxation agreements.

Preliminary reading

References
Australian Federal Tax Reporter. CCH Australia Ltd.
Australian Income Tax Assessment Act 1936, 1982 edn, CCH Australia Ltd.
1982 Australian Master Tax Guide. CCH Australia Ltd.

BS308 Advanced Company Law

Students enrolled in this unit will be expected to have passed BS201 Law of Business Organisations

The unit is concerned with the study of various contemporary issues in company law, especially relevant for students in the accounting stream contemplating public practice. The course examines current topics in such areas as the constitutional and jurisdictional framework of company law, company direction and management, company conflict, company misfeasance, company finance and company takeover activity.

Prescribed texts
Companies Act, 1980 (C’with Companies (Acquisition of Shares) Act, 1980 (C’with)

References
Afterman, A.B. and Baxt, R. Cases and Materials on Corporations and Associations. 3rd edn, Syd., Butterworths, 1980
Detailed references to journal articles will be given to students.
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 emphasising 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 protection policies;
- producer and commodity agreements;
- methods of transportation and distribution of goods and the legal principles relating thereto;
- comparison of the role of developing and developed countries with respect to international trade.

References

Greer, D. International Law. Syd., Butterworths, 1976

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 unit 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: 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 inter-relationships and inter-dependencies between the various components. Techniques such as financial modelling, simulation, cost-volume-profit analysis, discounted cash-flow analysis, standard costing and a number of optimisation models are studied also in the context of their uses as aids to budgetary planning.


References

Heckert, J.B. and Wilson, J.D. Business Budgeting and Control. 3rd edn, N.Y., Ronald Press, 1967

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:

- 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. 1-5. 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 BS213 Economics 1

The intention of 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.

A detailed list of references is made available during the course.

BS315 Monetary Economics

Prerequisite, BS111 Economics 1

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, rigidities 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
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. This recognises that urban problems are multi-faceted, demanding a multi-disciplinary approach. The unit covers the following broad areas: economic analysis and urban problems, urban location decisions, decentralisation, government and private roles in urban development, public policy and urban problems (with particular reference to housing, transport, the environment and energy).

References
Harrison, A.J. Economic5 and Land Use Planning. Lond., Croom Helm, 1977

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

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 computers 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 in 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.

References
A detailed reading guide is issued for each topic, and general references include:

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 events of DL/1, 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 and of 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 on-line system design, and be able to apply certain design calculations (such as queuing theory) and human factors decisions (such as screen design) to a simple on-line application.

References
Relevant material includes a wide range of texts and journals which will be discussed during each lecture. Two general references and suggested pre-reading are:
Bingham, J.E. and Davies, G.W.P. Planning for Data Communications. Lond., Macmillan, 1977
Deen, S.M. Fundamental of Data Base Systems Macmillan, 1977
BS328 Information Systems Analysis
Prerequisite, BS121 Introduction to Data Processing.
BS301 Management and Cost Accounting must have been attempted.

The intention is to develop an awareness of the suitability of systems data processing applications, although the technique should be analysis as a means of integrating a number of skills for solving purposes. The principal emphasis will be towards commercial systems.

Topics covered:
- the system 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:

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, LISP;
- examples: low level languages;
- machine instructions, assembler, macro language, 110 programming — file/device handling, data communications, channel programming.

Systems programming techniques
Data structures:
- list processing — stacks, queues and dequeues, and their representation in sequential and linked storage;
- other structures — trees, digraphs;
- applications — 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.

References
No prescribed texts. References will be announced during lectures.

BS330 Systems Software B
Prerequisite, BS329 Systems Software A

Productivity of systems designers and programmers, is improved by an ability to exploit the facilities offered by the systems software, implemented on the computer system with which they are involved.

In this unit, the purpose, structure and application are examined of different manufacturer’s architectures and trends in computer hardware.

Systems software
Language translators, operating systems, data base and data communications management systems, utilities and programming aids.

Operating systems
Resource scheduling, multiprogramming, virtual storage, multiprocessing, job control languages, operations, and a comparative study of a number of operating systems.

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, BS122 Administrative Studies 1

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 studies 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. Organizational Behaviour. 3rd edn, Ill., Irwin, 1980
- Webber, R.A. Management. Homewood, Irwin, 1975

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 framework; important aspects of the course. Students may also be given the opportunity to investigate a real Life business-non-business problem.

BS333  Marketing 3
Prerequisite, BS332  Marketing 2
Objective
The objective of this unit is to generate skills and experience in the implementation of marketing plans.

Content
Sales and sales management — the how and why of personal selling; the sales management function; territory management; product brand management — packaging and branding; product policy; strategic market-ng; services market-ng; international market-ng; social responsibility in marketing.

Teaching methods
Case studies, films and guest speakers with extensive practical experience are a feature of this unit.

References

BS334  Industrial and Legal Aspects of Marketing
Prerequisites, BS333  Marketing 3, BS334  Marketing and the Law
This subject teaches students the various aspects of the marketing function in industrial companies; the law as it applies to industrial marketing.

The industrial market
Nature and importance of industrial markets; classification of industrial products; characteristics and determinants of industrial market demand. (end-use analysis).

Industrial buyer behaviour
Customer classification; the buying process in industrial companies; buying motivation; economic, behavioural and organisational factors; differences in industrial and consumer buying

Market selection and product planning
Special aspects of pricing and distribution policies; relationship of the Industrial market with consumers; the effect of government regulations on importing and exporting goods and services; the effect of government regulations and the law on: packaging and labelling for marketing; using registered design and trade marks in the market-ng function; marketing defective products.

BS351  Accounting 3A — Contemporary Accounting Problems
In this unit, the problems associated with measuring the performance of business entities are examined. Topics covered include a study of the objectives of accounting; accounting methodology and the formulation of accounting standards; asset valuation; concepts of depreciation and the allocation problem; accounting for long-term leases, human resources and income tax allocation. In the latter part of the unit, the concept of income and alternative methods of measuring income in periods of changing prices are considered.

Textbooks

BS352  Accounting 3A — Analysis and Interpretation
Students are introduced to the various analytical methods and techniques used in analysing a company's financial statements. This involves a major study concerned with critical interpretation of analytical data and ratio analysis for assessing a firm's profitability, working capital management, long-term financial strength and intrinsic value of its share capital.

Diploma subjects
BS331  Accounting 3A — Contemporary Accounting Problems
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A

BS352  Accounting 3A — Analysis and Interpretation
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A

References
Packaging and Labelling Laws in Australia. Report by the T.P.C., June, 1977

BS353  Accounting 3B — Capital Budgeting
Different types of capital investment proposals are analysed and the necessity for a program to adminster and review capital expenditures examined in the light of the goals of the firm. Evaluation techniques such as the rate of return, payback period and discounted cash flow measure are considered assuming a state of certainty to exist. Further considerations such as taxation, inflation, the rate of interest, depreciation, abandonment, and budgeting techniques are introduced to the analysis.
Measures to allow for risk analysis in capital investment are considered so that the evaluation techniques can be applied under conditions of uncertainty. The importance of qualitative factors in investment decisions is stressed throughout.

Preliminary reading
- Middleton, R.A. The Economics of Capital Expenditure. 4th edn, Butterworths, 1977

References

BS354 Accounting 3B — Advanced Cost Accounting
Students enrolled in this unit will be expected to have passed BS252 Accounting 2B

Concepts introduced in Accounting 2B (BS252), in the areas of management planning, control and decision-making are expanded in this unit.

Topics covered include the measurement of divisional and managerial performance with emphasis on problems associated with the allocation of common costs and transfer pricing; applications of various analysis in analysing profit performance; tailor-making cost data for specific managerial decisions; problem areas in product costing; cost control techniques in non-manufacturing areas; consideration of recent developments in manufacturing cost control; critical assessment of inventory control techniques currently available to management which leads to the development of appropriate decision models, a study of their application and problems of implementation.

References
- Solomon, D. Divisional Performance Measurement and Control Homewood, Ill., Irwin, 1965
- Thomas, W.E. ed. Readings in Cost Accounting Budgeting and Control. 4th edn, Cincinnati, Ohio, South-Western, 1973

BS355 Accounting 3C — Auditing
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A

The primary emphasis of the course is an examination of the auditor’s decision-making process. The assumption being that, if students understand the objectives to be accomplished in a given audit area, the circumstances of the engagement, and the decisions to be made, they should be able to determine the appropriate evidence to be gathered and how to evaluate the evidence thus obtained.

Topics studied include the nature of an audit; the rights, duties and legal liability of auditors; audit methodology; internal control; evidence, sampling, materiality, the audit report, independence, auditing and EDP, internal and management audits, as well as the more practical aspects of audit program applications.

References

BS356 Accounting 3C — Taxation Law
Students enrolled in this unit will be expected to have passed BS251 Accounting 2A.

This unit consists of an analysis of income tax law in Australia. Topics to be studied include assessable income, taxable income and allowable deductions, and the special provisions relating to companies, partnerships and trusts.

References

BS367 Economic Policy
Prerequisite: BS261 Economics 2

The purpose of the unit is to examine and analyse contemporary economic policy issues relevant to the Australian economy.

Towards this aim the topics covered are determined by Australian current economic conditions and policy considerations. Topics are selected from among the following areas: policies designed to combat the problems of inflation and unemployment; Industrial relations policy issues; Industry policies (intersector relationships, protection, structural change); balance of payments problems and policies; current social economic issues (including poverty) and policy implications.

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.

BS378 Business Systems
Prerequisite: BS251 Accounting 2A or BS252 Accounting 2B

Course objectives
For students to understand the nature of a business system and the manner in which business systems can be best developed and maintained:
- for students to be able to follow through the development of a system from the point of determining system requirements through to successful implementation;
- for students to be able to understand the processing alternatives available and the advantages and disadvantages of each.
Topics include: the nature of a business system; selecting systems for development; steps in system design; flowcharting techniques; decision tables; form design; code design; system controls; system documentation; evaluating processing alternatives; implementation procedures.

References

BS381 Behaviour in Organisations
Prequisite, Administrative Studies I

This unit is concerned with administrative problems related to or arising from human behaviour in various forms of business organisation. An experiential emphasis is given to the mastery of concepts by the use of structured experiences, case studies and discussion. This is complemented by assignments, tutorials, excursions and the presentation of papers.

Main topics include: the psychological contract and organisational socialisation; motivation and organisational climate; the technological system and its impact on the psycho-social system; interpersonal perception; interaction theory and group dynamics; value systems and their implications for management; communication systems; managerial styles; organisational structural effects on human behaviour; problems and techniques of organisational change and conflict management.

Textbook

References

BS383 Marketing
Prequisite, BS261 Economics 2

The object is to enable students to understand the marketing environment and to recognise the importance of the marketing function in both business and non-business organisations.

This unit is concerned with the fundamentals of marketing, marketing planning, marketing information and marketing research. 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.

Main topics include:
- the marketing concept and scope of marketing management,
- the marketing planning process: consumer behaviour, consumption and expenditure patterns, the buying process and market segmentation.
- the marketing mix: product, price, promotion and distribution
- the practical issues;
- marketing research: problem definition, research strategy, survey methods, sampling;
- introduction to marketing strategy

References

BS384 Law of Business Entities

Students usually should be enrolled in or have passed BS251 Accounting LA when undertaking this unit.

The intention is to undertake a comparative analysis of the form of business entities. Essentially this involves an analysis of corporations, partnerships, trusts and unincorporated associations.

References
Partnership Act, 1958
Companies Act, 1961
Trustee Act, 1958

BS404 Advanced Financial Accounting

Prequisites, BS261 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/allowance 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
BS405  Advanced Auditing

This unit presumes familiarity with the subject matter of BS304 Auditing. It should be most useful for those students planning to enter the profession.

The objective of the unit is to provide students with an understanding of the principles of the audit of EDP systems, and the application of statistical sampling in the audit context.

The topics to be studied include: a review of the basic principles of auditing; introduction to business data systems; review of internal controls in the EDP context; testing and evaluation of internal controls by the use of Test Decks and Integrated Test Facility.

The application of statistical sampling techniques in the context of internal control, including a study of judgment, acceptance, discovery, attribute and Bayesian sampling plans. The application of statistical sampling generally, in the context of alpha, beta and ultimate risk, variables estimation. 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;
- costs for decision-making and specific techniques such as cost/volume/profit analysis and discounted cash flow analysis;
- accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
- divisional performance evaluation and transfer pricing,
- budgeting and profit analysis.

References

Caplan, E.H. Management Accounting and Behavioural Science Reading, Mass., Addison-Wesley series in Accounting, 1971
Ma, R. and Mathews, R. The Accounting Framework. 1st edn, Melib., Cheshire, 1979

BS457  Introduction to Financial Management

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;
- costs for decision-making and specific techniques such as cost/volume/profit analysis and discounted cash flow analysis;
- accounting reports for performance evaluation and the assumptions that are implicit in their compilation;
- divisional performance evaluation and transfer pricing,
- budgeting and profit analysis.

References

Caplan, E.H. Management Accounting and Behavioural Science Reading, Mass., Addison-Wesley series in Accounting, 1971
Ma, R. and Mathews, R. The Accounting Framework. 1st edn, Melib., Cheshire, 1979

BS461  Economics

No prior knowledge of economics is assumed. Applicants who have majored in economics at a tertiary level are advised to enrol for another post-diploma subject. Applicants who have studied economics at sub-tertiary 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 anti 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
Index Economics, State of Play Syd., George Allen and Urwin, 1980
A detailed reading guide will be issued at the start of the semester.
BS463  Current Issues in Economics
Prerequisite, approved tertiary studies in economics

The purpose is to examine and analyse important contemporary issues in economics 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; protection, structural change; balance of payments problems and policies (including exchange rate policies);
- current social economic issues (including poverty)

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
Prerequisite, a pass or preclusion from BS457 Introduction to Financial Management

The general objective is to develop an understanding of financial theory so that the student can evaluate the firm’s investment, financing and dividend decisions in keeping with an objective of maximising shareholder wealth; together with providing students with the means of applying analytical techniques to solve a wide variety of problems involving financial decisions.

In particular the topic coverage includes performance evaluation, working capital management, capital structure and leverage, fixed asset acquisition, dividend policy, valuation of the firm and business combinations.

Textbook

References

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. IRR, 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, FLAPES 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 IFPS 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 Problem. 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 unit in the graduate diploma course in business administration, or accounting.

This unit introduces the ‘body of thought’ about the problems of management, with special emphasis on the relationships 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.

Theory is applied to real situations through assignments requiring the investigation of an organisation with which the student is familiar.

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 process of organisational socialisation, including concepts of role theory and the 'psychological contract' of reciprocal employer-employee expectations;

organisational climate and its relationship with power, affiliation and achievement motivation of managers;

the evolution of management ethics and values. The protestant ethic, *laissez faire*, social Darwinism. The social ethic, ethical pluralism, the relevance of these to current management practice;

evolution of organisation and management theory, scientific management, management process, behavioural management, management science, empirical management, systems management;

systems theory and organisations. An examination of the system theory idea and its use as a tool of organisational analysis;

behavioural aspects of decision-making;

technological systems and worker satisfaction;

effective organisation structures.

**Recommended reading**


*Thompson, J.D.: Organisations in Action. N.Y., McGraw-Hill, 1967*

**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 organisations 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.

**Textbooks**

*Experiential Workbook (Essential Purchase)*


**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;

the means of analysing market information as required when evaluating capital expenditure proposals.

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 market concept, the scope of market decisions and the market and an analysis of demand. 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.

**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 market-planning process and the elements of the marketing mix.

The objective in this unit is to:

introduce the student to the fundamentals of market 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 will be composed 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.
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 practice, 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
Deslier, C. Personnel Management. Repton, Va., 1978
Fijor, P. and Myers, C.A. Personnel Administration: A Practical 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 role. As an 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 strategies. The company and its societal responsibilities;

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
- Steiner, C. Corporate Planning: What Every Manager Must Know. N.Y., Free Press, 1979

BS589 Management, Organisations and People

This unit is taken in the course for the graduate diplomas in accounting and management systems.

The course provides a macro view of organisations as open systems examining the interfaces and interactions in the environment, tasks, technology, structure and people. It then focuses on the psychosocial 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 them current and past work experience as a source of material to enrich class activities. Experimental learning methods as well as lectures, seminar, discussion and case methods are employed.
Considerable supplementary reading is required outside class time. Assessments is progressive and may include essays, class presentations and/or tests.

Topics are chosen from: the nature of the organisation; the 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.

References

BS594 Quantitative Methods
No formal prerequisites are specified beyond a previous knowledge of basic mathematics.

This unit in the graduate diploma in 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 package programs on computer terminals.

The topics included are: analysis and presentation of data; statistical testing; decision theory; forecasting (with emphasis on short-term models); simple linear programming; inventory management; critical path planning.

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; position/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
Argenti, J : Systematic 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 national and domestic public and private enterprise.

References
Detailed each session by the lecturer

BS596 Marketing Management 2
Prerequisites, BS583 Marketing Management 1 BS495 Quantitative Methods BS461 Economics

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;
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: Systematic Corporate Planning Lond., Nelson, 1974

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
Anthony, R.N. : Planning and Control System, Graduate School of Business Administration, Boston, Harvard University, 1965
Argenti, J: Systematic Corporate Planning Lond., Nelson, 1974
Irwin, P.H.: Business Planning — Key to Profit Growth, Hamilton, Ont., SIA Canada, 1969
Auditing and EDP
Prerequisite, 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 students 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.

Contemporary Auditing
Prerequisite, BS355 Accounting 3C — Auditing or equivalent

It is essential that students are familiar with the subject matter of BS355 Accounting 3C or BS304 Auditing as most seminars will include the 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 Markel’s behavioural model of independence, and an analysis of empirical 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 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 cognitive 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.I.R. of the A.A.S.E.;
- forecasts in published accounts — the role of the auditor, governmental auditing, social auditing.

References
Detailed reading guides are issued during the semester.

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. Syd., Butterworths, 1976
Richardson, R.S. The Taxation of Corporations and their Shareholders, 3rd edn, North Ryde, N.S.W., CCH Aust. Ltd., 1980
Tax Essays Volume J. Syd., Butterworths, 1979
Understanding the New Investment Allowance. North Ryde, N.S.W., CCH Aust. Ltd., 1976

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 (Commonwealth)
Australian Federal Tax Reporter, North Ryde, N.S.W., CCH Aust. Ltd.
Marks, B. Alienation of Income. North Ryde, N.S.W., CCH Aust. Ltd., 1978

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

Investment Analysis
BS655 Current issues in Accounting usually should have been completed prior to attempting this unit.

The unit consists of two parts, security analysis and 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. Bk. 3, University of Qld Press, 1980
Markowitz, H.M. Portfolio Selection. New Haven, Yale UP., 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.

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.

Australian financial markets
The intermediation process
Capital raising: markets for new and traded 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.
Intervention in tile market: targets and instruments; "captive market" legislation; "accomodatory" money policy.

References
Davis, K and Lewis, M. Monetary Policy in Australia Melb., Cheshire, 1980
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;
government 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

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; case study.

References

BS673 Commercial Systems Design

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.
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 appreciate critically the rate of 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, BS671
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 personcomputer 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:

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 proposed 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 BS671 Commercial Systems Design.

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 entry equipment, computer equipment and personnel;
- manage the introduction of new projects and the continuation of existing projects.

No formal prerequisites are specified. However, it is assumed that candidates have a prior knowledge of administrative theory and practice and of computer systems.

Course structure
The final selection of topics is made from the following depending on the students’ interests and prior knowledge: the role of operations manager; resource scheduling; computer centre control; data entry; equipment selection; planning principles; behavioural issues.

References
- Fried, L., Practical Data Processing Management, Virginia, Reston, 1979
- Jancura, E. Audit and Control of Computer Systems, N.Y., Petrocelli/Charter, 1974

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 the 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.
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;
- allow the student to experience 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 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 for 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 role 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

Extensive journal references including manufacturers’ publications.

Parker, D. Crime by Computer N.Y., C. Sibbener 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


References


BS682 Managing Conflict and Change in Organisations

A second-year subject in the graduate diploma course in organisation behaviour.

The subject introduces students to the current theory and practice associated with managing change and conflict in organisations. It looks at the techniques of organisation development (OD) and the role of the change agent in a largely experiential way. Following this it examines the applicability of this body of OD knowledge to the role of the practising manager in a day-to-day setting. The similarities and differences between these roles, manager and change agent, are identified with the object of developing a new synergy, a set of identified approaches for bringing about change and managing conflict in organisations.

Industrial conflict is an important issue.

Textbooks

BS683 Management and Leadership in Organisation
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, whilst no prerequisite studies in law are required, students who have not previously studied law 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
Negotiable instruments; credit transactions, shares; debentures; factoring and leasing. Stamp duty considerations are also canvassed.
Legal methods of securing loan funds
Personal securities, e.g. guarantee and indemnity; securities over assets, e.g. mortgages, Bill of Sale, pledges liens; floating charges; securities over proceeds, e.g. assignments and charge; the significance of statutory compliance to render a security effective, e.g. Companies Act 1961 (Victoria), Money Lenders Act 1958 (Victoria), Instruments Act 1958 (Victoria); proposals for reform, e.g. Credit Bill 1981; Chattels (Securities) Bill 1961.
Legal aspects of financial markets
The legal nature of the stock exchange and the legal basis of its controls on trading and fundraising; statutory requirements relating to the raising of capital, including a consideration of the underwriting, sub-underwriting and trustees’ roles; statutory controls over misconduct in financial markets, including an examination of wider jurisdiction and administrative/regulatory issues consequent upon the formation of the National Companies and Securities Commission.
Taxation and finance
Corporate taxation: an analysis of the present basis for taxing corporations and, in particular, financial corporations; a consideration of alternative methods of taxing corporations; an analysis of the present taxation consequences of owning or dealing in financial assets; a review of proposed taxation reforms regarding the ownership of, and dealing in financial assets (e.g. wealth and capital gains taxes) and the provision of financial services (e.g. V.A.T.).

References

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 inter-personal behaviour;
to help participants understand their own perceptions, values and attitudes, and to gain insight into how these may influence behaviour;
to increase options for behaviour (mainly communications) through learning appropriate skills. Methods used are largely cooperative and practical rather than didactic and theoretical. Active group participation is therefore necessary.
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

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, to 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.
To assist students to complete their research paper, there are formal sessions in research methodology during the second semester each year.
References
Sterling, R.R. ed Research Methodology in Accounting. Lawrence, Kansas Scholars Book Co., 1972

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
BS753 Corporate Financial Management 2

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.

References

BS754 Investment Management

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
- Calder, S., Lindsay, P. and Koch, D. Futures Stock Melbourne, Horwitz Grahame, 1980
- Elton, E.J. and Gruber, M.J. Portfolio Theory, 25 Years After. Amsterdam, New Holland

BS755 Research Project

Objectives
To enable students to apply the concepts and techniques studied during the course to a substantial practical problem in corporate finance.

Specifically, students are required to show they have the ability to define a corporate finance problem clearly, select and apply appropriate methodology to solve it and present a clear and concise written report on the work undertaken.

Course Program
This unit is conducted over two semesters. While the work is carried out by students it is done to a set program under the supervision of staff.

Seminars are run at the beginning of the semester. They cover the following topics:
- The objectives of the research project;
- The selection of an appropriate project;
- The selection of suitable methodology for different types of projects;
- Organisation and standard of report expected.

Written proposals for projects are submitted by March 31. These must include sufficient details for staff to assess the usefulness and feasibility of a project.

Proposals are then approved and supervisors appointed as soon as possible after submission, but in any case not later than April 30.

Students are required to report at least monthly 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:
Academic staff ........................................ EN2
Courses offered ...................................... EN3
Cooperative education ............................... EN4
Advice to prospective students ................... EN7
Admission and entrance requirements .......... EN7
Application procedure .............................. EN8
Professional recognition ........................... EN8
Passing by years ................................... EN11
Guidelines for part-time study ................. EN13
Short courses ....................................... EN14
Prizes, scholarships and awards ................. EN14

Department of Civil Engineering
— Undergraduate courses ............................ EN16
— Postgraduate courses .............................. EN17

Department of Electrical and Electronic Engineering
— Undergraduate courses ............................ EN21
— Postgraduate courses .............................. EN23

Department of Manufacturing Engineering
— Undergraduate courses ............................ EN24
— Postgraduate courses .............................. EN26

Department of Mechanical Engineering
— Undergraduate courses ............................ EN28
— Postgraduate courses .............................. EN30

Subject details ....................................... EN31
Building Surveying subject details ............ EN68
General information ................................. C1
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

**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.
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 as follows:

(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 and the Associate Diploma in Production Engineering.

Cooperative employers of Swinburne engineering students

The following are, or have been recently, associated with courses in civil, electrical/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
Aris 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
Bellco Controls Pty Ltd
BX Plastics (Aust) Pty Ltd
Brownbuilt Ltd
CFM Aluminium Fabricators
CIG 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 Piling and Engineering Edn Berhad
Commonwealth Aircraft Corporation
Companion Pty Ltd
Consolidated Electronic Industries Pty Ltd
Containers Ltd
Country Roads Board
Cyclone KM Products Pty Ltd
Dalsonware Pty Ltd
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<td>Dandenong Valley Authority</td>
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<td>Gutteridge Haskins &amp; Davey Pty Ltd</td>
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<td>Housing Commission of Victoria</td>
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<td>(CI) Australia Ltd</td>
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<td>International Harvester Co of Aust Pty Ltd</td>
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<td>Irwell Pty Ltd</td>
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<td>James Miller Holdings Ltd</td>
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<td>John Connell &amp; Assoc</td>
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<td>K. G. Johnston Pty Ltd</td>
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<td>Robert Jones Engineering Pty Ltd</td>
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<td>C. Kennon &amp; Co Pty Ltd</td>
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<td>David Linacre Pty Ltd</td>
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<td>Malaysia International Consultants</td>
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<td>— Machine Tool Division</td>
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<td>McConnell Dowell Constructors Ltd</td>
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<td>Siddons Industries Ltd</td>
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<td>Silentbloc (Aust) Pty Ltd</td>
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<td>Zenford Pty Ltd</td>
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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 for 1983.

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 specialize.

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 partially completed, an engineering course at another tertiary institution may apply for entry to an engineering degree course at Swinburne. Applications in this category are essentially considered on the basis of the course studied by the applicant and the results obtained. Enquiries should be directed to the head of the engineering department concerned.

The policy of the Engineering Faculty Board regarding admission with advanced standing is stated in the section entitled ‘Admission with advanced standing’.

Diploma of Building Surveying
Secondary students should note that there are no prerequisite subjects for entry to the Diploma of 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 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 1982
Standard entry to the first year of an undergraduate-degree course in engineering requires satisfactory completion of year 12 (sixth form) in a Victorian secondary school or its equivalent. Recommended subjects are English and at least three subjects from the areas of mathematics and the physical sciences.

A suitable selection of year 12 subjects would be English, chemistry, physics, pure mathematics and applied mathematics.

Entrance requirements 1983
Applicants seeking standard entry to the first year of an engineering degree course from 1983 onwards 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 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.
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 Diploma of Engineering (Chemical) is recognised by the Royal Australian Chemical Institute, 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.

Application procedure

In addition to the information given below applicants should refer to the section entitled, 'Application procedure', in the general section of the handbook.

Full-time

Applications for entry to full-time first-year courses, with the exception of students undertaking Tertiary Orientation Program courses at Swinburne Technical College, must be made through the Victorian Universities Admissions Committee, 11 Queens Road, Melbourne 3004. The closing date for applications is approximately the end of October in the year of application.

Applicants undertaking Tertiary Orientation Program courses at Swinburne Technical College who wish to enter first year of an engineering course need not apply through Victorian Universities Admissions Committee (VUAC). Applicants in this category apply directly to Swinburne.

In about September of each year a special application form is mailed to all students in the science/engineering course at the Swinburne Technical College. Students are required to present for enrolment on the day which is set aside for re-enrolling engineering students in December. Re-enrolment details will be mailed to Swinburne Technical College students applying for entry to an engineering course.

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.

The Engineering Faculty Selection Panel may require a mature-age applicant to undertake a special entry test early in February and present for an interview at Swinburne.

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 1982 may apply for deferment until 1983. 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 partially 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 the separate sections pertaining to the various departments of the engineering faculty.

Provisional time-tables for all years of engineering courses will be displayed at enrolment. Students should note that these time-tables are provisional only and may be changed depending on staff and facilities available. Where it is necessary to change a time-table, details will be posted on the faculty or departmental notice-board, as appropriate.

Many subjects are offered as part-time evening classes. Enquiries regarding subjects available on a part-time basis should be directed to the head of the relevant department.

Practical work
Practical work forms a significant part of most subjects offered by the engineering faculty.

Students are expected to attend all practical work sessions (for example, laboratory work, drawing office and field work, excursions and site visits) and to complete all the practical work assignments set by the lecturers responsible for a particular subject. Assignments not submitted by the due dates may fail to count as practical work completed.

Students should approach their lecturers to find out the details of practical work requirements in each subject.

Electives
Engineering degree courses (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, Science 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 1982 are given in the Swinburne calendar in 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) For fourth year mechanical engineering degree students the block passing concept operates on an omnibus subject rather than a yearly basis.*
(c) All part-time undergraduate students whose weekly workload is ten or more contact hours.
(d) Graduate diploma students who satisfy the above requirement or part-time students.

*This applies to students enrolled in the four-year degree course (1979 syllabus).

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 semesters 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:
* HD, D, C, P, P*, N*, N.

Note
N* — Fail but student appears to have made a serious attempt at the subject. P* — Bare pass in the subject.

(b) An automatic Faculty Pass will be awarded to students whose minimum assessment is N* and whose aggregate rating as calculated by the following formula is positive.

\[ A = \sum n_i z_i - 5 \sum n_i \]

where \( A \) is aggregate rating, \( n_i \) 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:

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<tr>
<th>Category Rating</th>
<th>Range of Marks</th>
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<tr>
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<tr>
<td>C</td>
<td>7</td>
</tr>
<tr>
<td>P</td>
<td>6</td>
</tr>
<tr>
<td>P*</td>
<td>5</td>
</tr>
</tbody>
</table>

| N*              | 4             | 0 — 49        |
| N               | 1             | 0 — 49        |

Note: 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:

Civil Engineering
FX982 First year degree (FIT and P/T)
FC984 Second year degree
FC986 Third year degree
FC988 Fourth year degree
FC989 Fifth year degree
FC992 Part-time degree — later years

Electrical and Electronic Engineering
FX982 First year degree (FIT and P/T)
FE984 Second year degree
FE986 Third year degree
FE988 Fourth year degree
FE989 Fifth year degree
FE992 Part-time degree — later years
Manufacturing Engineering
FX982 First year degree (FIT and PIT)
FP984 Second year degree
FP986 Third year degree
FP988 Fourth year degree
FP989 Fifth year degree
FP992 Part-time degree — later years
FP382 Associate diploma first year
FP386 Associate diploma third year
FP392 Associate diploma part-time

*Mechanical Engineering
FX982 First year degree (FIT and PIT)
FM984 Second year degree
FM986 Third year degree
FM992 Part-time degree — later years

*For mechanical engineering students enrolled in fourth year of the four-year degree course (1971 syllabus), the passing by years scheme operates on an omnibus subject basis rather than a yearly basis.

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 department, students may transfer from the course of study for which they are enrolled to a later course of study but should recognise that such a transfer may involve the undertaking of some additional subjects.

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) will not be permitted.

Normally, a student may be permitted to repeat a full year's work as a full-time student only once during his/her course. That is, a repeat of any full-time year will not be permitted if a student has previously repeated a full-time year earlier in his/her course.

Part-time
A part-time student who in any academic year 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) will not be permitted.

Note
A student who transfers from full-time to part-time study, or vice-versa, will be considered under the regulations applying to his/her new enrolment category.

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, ex-Swinburne Terri- tiary Orientation Program students, and applicants holding a deferred place are required to present for enrolment on the day which is set aside for re-enrolling engineering students in December. 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 years, regulations). The period of deferment will be determined by the Board in the light of particular circumstances.

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.
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 2 (b).

(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 subject in second semester. Where re-enrolment takes place, the student's record for the year will show two results for the subject concerned.

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.

5 Students undertaking the degree course in mechanical engineering

Final-year results for the degree in mechanical engineering are approved for publication by the Registrar’s Department, as soon as possible after students have completed the academic work for the year.*

*This applies to students completing the four-year mechanical engineering degree course (1971 syllabus).

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.

W.P. Brown medal

This is awarded by the Institution of Engineers, Australia, to the best all-round student in the final year of an engineering course. The award is a medal and a premium of $100.

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.

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. Value — up to $400 per year and tenable for a period not exceeding five years.

Further information may be obtained from the head of each engineering department.

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
- microprocessors
- residential raft slab design
- network analysis
- construction planning

Further enquires 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 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 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 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)

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<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
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Third year

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Part-time students may undertake these subjects over two semesters as

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*Approved subjects chosen from Art, Arts or Business

Fifth year

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Part-time students may undertake these subjects over two semesters as

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<th>Subject</th>
<th>Hours</th>
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<tr>
<td>CE502</td>
<td>45</td>
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<tr>
<td>CE553</td>
<td>45</td>
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</tbody>
</table>

*Approved subjects chosen from Art, Arts or Business
Degree conversion program — 1980 syllabus

For diplomates
For persons holding the 1972 Diploma of Engineering (Civil) from Swinburne, or equivalent, the course to be followed to obtain the degree of Bachelor of Engineering (Civil), 1980 syllabus is:

Subjects

Either
CE351 Structural Design or
CE361 Transport Engineering

Plus
SK390 Computer Programming
SM492 Mathematics
CE411 Structural Mechanics
CE421 Planning
CE451 Structural Design
SM492 Mathematics
CE491 Industrial Experience

Electives (3) chosen from:
CE552 Structural Design
CE571 Construction
CE532 Environmental Engineering
CE581 Geomechanics
CE592 Municipal Engineering
CE581 Structural Mechanics
CE561 Transport Engineering
CE591 Water Engineering

Notes
1. Students may be granted exemption from CE491 Industrial Experience if they have suitable engineering work experience. Formal application is required for this exemption.
2. Diplomates from other institutes are considered individually.

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.

Course structure

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<thead>
<tr>
<th>First year</th>
<th>Hours</th>
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<td>CE690</td>
<td>Civil Engineering Project Control</td>
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<td>CE691</td>
<td>Civil Engineering Management</td>
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<tr>
<td>CE692</td>
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<tr>
<th>Second year</th>
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<td>CE770</td>
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<tr>
<td>CE771</td>
</tr>
<tr>
<td>CE790</td>
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</table>
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 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**

- **First year**
  - CE611 Structural Mechanics
  - SM623 Engineering Mathematics
- **Second year**
  - CE751 Concrete Design and Construction
  - CE752 Design of Steel Structures
- **Third year**
  - CE881 Soil Mechanics
  - CE851 Design Projects

**Hydraulics stream**

- **First year**
  - CE623 Town Planning
  - SM623 Engineering Mathematics
- **Second year**
  - CE751 Concrete Design and Construction
  - CE731 Hydraulics and Public Health Engineering
- **Third year**
  - CE881 Soil Mechanics
  - CE821 Design Projects

**Municipal and highway engineering stream**

- **First year**
  - CE623 Town Planning
  - CE693 Powers and Duties of Local Government Engineers
- **Second year**
  - CE761 Municipal and Highway Engineering
  - CE731 Hydraulics and Public Health Engineering
- **Third year**
  - CE881 Soil Mechanics
  - SM623 Engineering Mathematics
  - CE681 Geology

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></th>
<th>Hours</th>
<th>Year</th>
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<tbody>
<tr>
<td><strong>First year</strong></td>
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</tr>
<tr>
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<td>SM601</td>
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<td>BS762</td>
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<td>CE764</td>
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<td>CE863</td>
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<td>or Electives (2)</td>
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<td>CE865</td>
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</table>

EN18
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
First year
CE621 Urban Systems 1
BS661 Urban Economics
AT691 Urban Sociology
Second year
CE721 Urban Systems 2
CE722 Environmental Systems Management
CE723 Urban Transport
Third year
CE821 Urban Systems 3
CE822 Urban Design
Electives from—
BS861 Urban Economics
CE823 Urban Transport Systems
CE824 Systems Planning
CE825 Environmental Engineering
AT791 Urban Sociology
CE826 Urban Energy Systems

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.

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 the Swinburne Technical College.

Career potential
At present, about eight of every ten graduates in building surveying enter the municipal sphere and the others are absorbed in the building industry.
The building surveyor in a municipality is the Council's technical officer in matters pertaining to buildings. Duties include the giving of advice to council on various parliamentary acts and regulations, council bylaws and regulations relevant to building, together with their administration as required by law and by council. The building surveying department is responsible for checking of plans and computations submitted for council approval and for the carrying out of inspections of buildings during construction, alteration and demolition.
Career prospects are very good, since there is a continuing demand for building surveyors in the municipal field, with more restricted opportunities in the private sector.

Regulations pertaining to the course
Regulations relating to the course are as for other engineering undergraduate courses and are set out at the beginning of this book.

Structure of the course
The diploma of building surveying is structured on a cooperative basis, and consists of six academic semesters at Swinburne and one semester in industry. The total length of the full-time course is three-and-a-half years.
First and second years are spent full-time at Swinburne. In third year, students spend the second semester working in industry. This cooperative employment is arranged by Swinburne and students are paid by the employer. Students benefit greatly from this first-hand experience and a consistent liaison is maintained between the mentor, the employer, and the student.
The fourth year, which consists of only one semester, is spent at Swinburne.

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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

<table>
<thead>
<tr>
<th>Course</th>
<th>First year</th>
<th>Hours</th>
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<tbody>
<tr>
<td></td>
<td>Sem 1</td>
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<td>CF112 Applied Mechanics</td>
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<td>ME169 Building Services 1</td>
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<td>MP182 Building Materials 1</td>
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<td>SM191 Computations</td>
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<td>SP191 Building Science</td>
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<td>TB701 Building Structures</td>
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<td>TB702 Building Practice</td>
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<td>CE242 Land Surveying</td>
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<td>CE282 Geomechanics</td>
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<td>ME269 Building Services 2</td>
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<td>MP222 Building Materials 2</td>
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<td>TB703 Scaffolding</td>
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<td>TB704 Practical Inspection</td>
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<td>TB710 Statutory Control 1</td>
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<td>CE392 Industrial Experience</td>
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<td>BS399 Administration 1</td>
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<td>CE322 Urban Planning 1</td>
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<td>CE352 Structural Design 2</td>
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<td>TB712 Statutory Control 2</td>
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<td>TB471 Building Structures 3</td>
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<th>Hours</th>
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<tr>
<td>BS400 Administration 2</td>
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<td>CE402 Professional Projects</td>
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<td>CE422 Urban Planning 2</td>
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<tr>
<td>CE452 Structural Design 3</td>
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<tr>
<td>CE472 Building Structures 4</td>
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<td>CE482 Geomechanics 2</td>
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<tr>
<td>CE492 Building Law and Contracts</td>
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</tbody>
</table>

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 100kV is being developed.

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)
Degree of Master of Engineering
Graduate Diploma in Digital Electronics
Graduate Diploma in Energy Systems

Career potential

Graduates from Swinburne are qualified for appointment to professional engineering positions in Commonwealth and State Government departments and instrumentalities, and in private industry.

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)

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

**First year (1980 syllabus)**

<table>
<thead>
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<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>AT194 Thinking and Communicating</td>
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<tr>
<td>CE111 Applied Mechanics</td>
<td>90</td>
</tr>
<tr>
<td>EE183 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 Practices and Processes</td>
<td>60</td>
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<tr>
<td>SC194 Chemistry</td>
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<td>SK194 Computations</td>
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<td>SM194 Mathematics</td>
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<td>SP194 Physics</td>
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Elective (1) from:
- CE101 Civil Engineering — Structures
- EE186 Electrical Engineering
- ME216 Mechanical Engineering Systems
- MP191 Manufacturing Engineering

**Second year (1980 syllabus)**

<table>
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<th>Course</th>
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<tr>
<td>EE285 Electromagnetic Devices</td>
<td>90</td>
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<tr>
<td>EE287 Electronics</td>
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<tr>
<td>EE257 Electrical Design</td>
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<tr>
<td>SP294 Engineering Physics</td>
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<td>SM294 Mathematics</td>
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<td>MP283 Engineering Materials</td>
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<tr>
<td>EE281 Electrical Measurements</td>
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<tr>
<td>EE292 Communication Principles</td>
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<td>EE290 Environmental Engineering</td>
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<td>SK294 Computer Programming</td>
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**Third year (1980 syllabus)**

**Semester 1**

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<td>EE301 Industrial Experience</td>
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**Semester 2**

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<td>EE385 Electrical Power and Machines</td>
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<tr>
<td>EE397 Electronics and Communications</td>
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<tr>
<td>EE383 Electromagnetic Fields</td>
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<td>EE399 Linear Control Systems</td>
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<td>EE395 Electrical Design</td>
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<td>SM394 Engineering Mathematics</td>
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**Fourth year**

**Electrical power stream**

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<tr>
<th>Course</th>
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<tbody>
<tr>
<td>EE455 Electrical Design</td>
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<tr>
<td>EE463 Circuits and Fields</td>
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<tr>
<td>EE485 Electrical Power and Machines</td>
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<tr>
<td>EE496 Electronics and Communications</td>
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<tr>
<td>EE489 Control Systems</td>
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<tr>
<td>SM494 Engineering Mathematics</td>
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<tr>
<td>SP404 Engineering Physics</td>
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</tbody>
</table>

**Electronics stream**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester 1</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>EE457 Electronic Design</td>
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<tr>
<td>EE463 Circuits and Fields</td>
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<tr>
<td>EE487 Electronics and Communications</td>
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<tr>
<td>EE488 Electrical Power and Machines</td>
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<tr>
<td>EE489 Control Systems</td>
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<td>SM494 Engineering Mathematics</td>
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<tr>
<td>SP404 Engineering Physics</td>
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</table>

**Fifth year students in 1982 will undertake the fifth year of the 1980 syllabus, which is as follows:**

**Fifth year**

**Electrical power stream**

<table>
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<tr>
<th>Course</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>EE555 Electrical Design and Project</td>
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<td>EE751 Operations Research in</td>
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<tr>
<td>Electrical Engineering</td>
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**Electrical Design**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>EE588 Electronics</td>
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<tr>
<td>EE589 Control Systems</td>
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<tr>
<td>EE581 High Voltage Systems</td>
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</tr>
<tr>
<td>EE583 Electrical Drives</td>
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</table>

Phasing-in of 1980 degree course

To enable the phasing-in of the 1980 degree course, fourth year students in 1982, who have completed the third year of the 1976 syllabus, will undertake the following program of subjects in each stream, before proceeding on to the fifth year of the 1980 syllabus.

**Fourth year**

**Electrical power stream**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester 1</th>
<th>Hours</th>
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<tbody>
<tr>
<td>EE455 Electrical Design</td>
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<tr>
<td>EE463 Circuits and Fields</td>
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<tr>
<td>EE485 Electrical Power and Machines</td>
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<tr>
<td>EE496 Electronics and Communications</td>
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<tr>
<td>EE489 Control Systems</td>
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<tr>
<td>SM494 Engineering Mathematics</td>
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<td>SP404 Engineering Physics</td>
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**Electronics stream**

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<tr>
<th>Course</th>
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<td>EE457 Electronic Design</td>
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<td>EE463 Circuits and Fields</td>
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<td>EE487 Electronics and Communications</td>
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<td>EE489 Control Systems</td>
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<td>SM494 Engineering Mathematics</td>
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<td>SP404 Engineering Physics</td>
<td>30</td>
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</tr>
</tbody>
</table>

**Fifth year students in 1982 will undertake the fifth year of the 1980 syllabus, which is as follows:**

**Fifth year**

**Electrical power stream**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE555 Electrical Design and Project</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>EE751 Operations Research in</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>120</td>
<td></td>
</tr>
</tbody>
</table>

**Electrical Design**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester 1</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE588 Electronics</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>EE589 Control Systems</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>EE581 High Voltage Systems</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>EE583 Electrical Drives</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

---

Faculty of Engineering
**Electronics stream**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE557</td>
<td></td>
</tr>
<tr>
<td>EE573</td>
<td></td>
</tr>
<tr>
<td>EE587</td>
<td></td>
</tr>
<tr>
<td><em>plus two from</em> -</td>
<td></td>
</tr>
<tr>
<td>EE582</td>
<td>60</td>
</tr>
<tr>
<td>EE584</td>
<td>60</td>
</tr>
<tr>
<td>EE580</td>
<td>60</td>
</tr>
<tr>
<td>EE589</td>
<td>60</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.*

For information only the proposed fourth year of the 1980 syllabus is as follows, and will be implemented as soon as possible.

### Fourth year

#### Electrical power

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<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>
<td>60</td>
</tr>
<tr>
<td>EE455 Electrical Design</td>
<td>45</td>
</tr>
<tr>
<td>MP422 Engineering Administration</td>
<td>30</td>
</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td>45</td>
</tr>
<tr>
<td>General Elective</td>
<td>45</td>
</tr>
</tbody>
</table>

#### Semester 2

EE401 Industrial Experience

### Fourth year

#### Electronics stream

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE488 Electrical Power and Machines</td>
<td>60</td>
</tr>
<tr>
<td>EE487 Electronics and Communications</td>
<td>90</td>
</tr>
<tr>
<td>EE489 Control Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE457 Electronic Design</td>
<td>45</td>
</tr>
<tr>
<td>MP422 Engineering Administration</td>
<td>30</td>
</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td>45</td>
</tr>
<tr>
<td>General Elective</td>
<td>45</td>
</tr>
</tbody>
</table>

#### Semester 2

EE401 Industrial Experience

---

**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</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SP294 Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>SM394 Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE486 Electrical Power and Machines</td>
<td></td>
</tr>
<tr>
<td>EE487 Electronics and Communications</td>
<td></td>
</tr>
<tr>
<td>SM494 Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE401 Industrial Experience</td>
<td></td>
</tr>
<tr>
<td>EE488 Electronic Design and Project</td>
<td></td>
</tr>
</tbody>
</table>

*plus two from -

<table>
<thead>
<tr>
<th>Course</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EE582 Communications Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE584 Electronic Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE580 Computer Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE589 Control Systems</td>
<td>60</td>
</tr>
</tbody>
</table>

---

**For Holding the Swinburne 1972 Diploma of Engineering**

### Electronics stream

<table>
<thead>
<tr>
<th>Course</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SP294 Engineering Physics</td>
<td></td>
</tr>
<tr>
<td>SM394 Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>EE486 Electrical Power and Machines</td>
<td></td>
</tr>
<tr>
<td>EE487 Electronics and Communications</td>
<td></td>
</tr>
</tbody>
</table>

*plus two from -

<table>
<thead>
<tr>
<th>Course</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EE582 Communications Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE584 Electronic Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE580 Computer Systems</td>
<td>60</td>
</tr>
<tr>
<td>EE589 Control Systems</td>
<td>60</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 diplomas 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
First year
Semester 1
EE405 Semiconductor Electronics 60
EE406 Digital Logic 60

Semester 2
EE407 Switching Circuit Analysis and Synthesis 60
EE408 Input/Output Techniques 60

Second year
Semester 1
EE505 Integrated Circuit Components 60
EE506 Digital System Techniques 60

Semester 2
EE507 Digital System Applications 60
EE508 Design and Project 60

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.

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
First year
Semester 1
EE417 Electrical Technology 30
EM417 Thermal Technology 30
BS417 Energy Economics 30
AT692 Energy Policy Formation 30

Semester 2
EA424 Energy Resources and Conversion 60
EA425 Environmental Engineering 30
BS418 Energy Economics 30

Second year
Semester 1
EE515 Energy Utilisation and Conversion 60
EM524 Energy Resources and Conversion 60

Semester 2
EE516 Energy Utilisation and Conversion 60
EE517 Energy Transmission and Transportation 60

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.

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 automotive, 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 traditional metal-working processes, the growing fields associated with non-metallic material, 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 from entrance examinations.

Course structure

The first, second and third year courses are shown for students entering in 1980 or later. The course for fourth and fifth years is shown for students who entered the course in 1979. 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) Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM194</td>
<td>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>SK196</td>
<td>Computation</td>
<td>30</td>
</tr>
<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>
<td>90</td>
</tr>
<tr>
<td>ME125</td>
<td>Thermodynamics and Heat Transfer</td>
<td>60</td>
</tr>
<tr>
<td>EE133</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>

Elective (1) from

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE101</td>
<td>Civil Engineering — Structures</td>
<td>30</td>
</tr>
<tr>
<td>EE136</td>
<td>Electrical Engineering</td>
<td></td>
</tr>
<tr>
<td>ME165</td>
<td>Mechanical Engineering Systems</td>
<td></td>
</tr>
<tr>
<td>MP191</td>
<td>Manufacturing Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** 750 Hours

Second year (1980 syllabus) Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM296</td>
<td>Mathematics</td>
<td>120</td>
</tr>
<tr>
<td>SA296</td>
<td>Physical Science</td>
<td>60</td>
</tr>
<tr>
<td>ME219</td>
<td>Applied Mechanics</td>
<td>150</td>
</tr>
<tr>
<td>AT293</td>
<td>Liberal Studies</td>
<td>45</td>
</tr>
<tr>
<td>SK236</td>
<td>Computer Programming</td>
<td>15</td>
</tr>
<tr>
<td>EE234</td>
<td>Electronic Circuits and Devices</td>
<td>60</td>
</tr>
<tr>
<td>MP251</td>
<td>Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td>MP211</td>
<td>Manufacturing Technology</td>
<td>90</td>
</tr>
<tr>
<td>MP281</td>
<td>Engineering Materials</td>
<td></td>
</tr>
<tr>
<td>MP231</td>
<td>Industrial Engineering</td>
<td>30</td>
</tr>
</tbody>
</table>

**Total:** 750 Hours

EN24
### Third year (1980 syllabus)

#### Semester 1
- **MP300** Industrial Experience

#### Semester 2
- **SM396** Mathematics 60
- **MP381** Systems Engineering 30
- **MP301** Instrumentation and Control 30
- **ME319** Applied Mechanics 45
- **MP321** Engineering Administration 60
- **MP351** Design for Manufacture 75
- **MP311** Manufacturing Technology (P) 375
- **MP312** Manufacturing Technology (M) 75
- **MP313** Manufacturing Technology (C) 75

#### Fourth year (1980 syllabus)

#### Semester 1 only
- **General Elective** 45
- **MP531** Industrial Engineering 45
- **MP521** Industrial Management 45
- **MP501** Manufacturing Project 90
- **MP551** Design for Manufacture (P) 75
- **MP511** Manufacturing Technology (P) 75
- **MP552** Design for Manufacture (M) 75
- **MP512** Manufacturing Technology (M) 75
- **MP553** Design for Manufacture (C) 75
- **MP513** Manufacturing Technology (C) 75

#### Degree conversion program — 1980 syllabus

For diplomates from other institutes will be considered individually.

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### Fourth year (1975 syllabus)

#### Semester 7 (18 weeks)

<table>
<thead>
<tr>
<th>Production or Materials technology stream</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SK427</strong> Computer Applications</td>
<td>45</td>
</tr>
<tr>
<td><strong>GS493</strong> General Studies</td>
<td>45</td>
</tr>
<tr>
<td><strong>EP325</strong> Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td><strong>EP335</strong> Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td><strong>EP355</strong> Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td><strong>SM402</strong> Mathematical Methods</td>
<td>45</td>
</tr>
<tr>
<td><strong>EP414</strong> Systems Engineering</td>
<td>54</td>
</tr>
<tr>
<td><strong>EP415</strong> Production Technology</td>
<td>63</td>
</tr>
<tr>
<td><strong>SK422</strong> Computer Applications</td>
<td>45</td>
</tr>
<tr>
<td><strong>GS493</strong> General Studies</td>
<td>45</td>
</tr>
<tr>
<td><strong>EP325</strong> Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td><strong>EP335</strong> Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td><strong>EP355</strong> Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td><strong>SM402</strong> Mathematical Methods</td>
<td>45</td>
</tr>
<tr>
<td><strong>MT415</strong> Materials Technology</td>
<td>117</td>
</tr>
</tbody>
</table>

#### Semester 8
- **EP402** Work Experience

#### Fifth year (1975 syllabus)

#### Semester 9 (18 weeks)

<table>
<thead>
<tr>
<th>Production technology stream</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EPS35</strong> Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td><strong>EPS35</strong> Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td><strong>EPS55</strong> Design for Manufacture</td>
<td>90</td>
</tr>
<tr>
<td><strong>EPS55</strong> Production Technology</td>
<td>63</td>
</tr>
<tr>
<td><strong>EPS26</strong> Elective</td>
<td>45</td>
</tr>
<tr>
<td><strong>EPS56</strong> Manufacturing Systems</td>
<td>144</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Materials technology stream</th>
<th>Hours semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EPS25</strong> Industrial Management</td>
<td>54</td>
</tr>
<tr>
<td><strong>EPS35</strong> Industrial Engineering</td>
<td>54</td>
</tr>
<tr>
<td><strong>EPS55</strong> Design for Manufacture</td>
<td>94</td>
</tr>
<tr>
<td><strong>MT415</strong> Materials Technology</td>
<td>262</td>
</tr>
</tbody>
</table>

*Includes one week project at end of semester

Value 25 hours.

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*One week assignment at end of course — 36 hours included.

For information only — the proposed later years of the 1980 syllabus are as follows and will be implemented in 1982 and 1983.
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

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC113</td>
<td>60</td>
<td>Second year</td>
<td>720</td>
</tr>
<tr>
<td>MP101</td>
<td>60</td>
<td></td>
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</tr>
<tr>
<td>ME119</td>
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<tr>
<td>ME129</td>
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<td>MP105</td>
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<tr>
<td>MP103</td>
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<td></td>
</tr>
<tr>
<td>MP104</td>
<td>120</td>
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<td></td>
</tr>
<tr>
<td>SM113</td>
<td>120</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>720</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA201</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA211</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA202</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>360</td>
<td></td>
<td></td>
</tr>
</tbody>
</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 in engineering biochemistry.

Course structure

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC571</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SC582</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>180</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>540</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Biochemists or others who have covered appropriate parts of the course could attend the corresponding course offered in chemical engineering.

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA311</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA312</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA491</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>270</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA201</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA211</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA202</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>360</td>
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</tr>
</tbody>
</table>
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 for 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

Battersby, A. Mathematics in Management Hammonds worth, Penguin, 1966
Moore, P.C. Basic Operational Research. Lond, Pitman, 1968

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>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP421</td>
<td>60</td>
</tr>
<tr>
<td>EP423</td>
<td>60</td>
</tr>
<tr>
<td>EP424</td>
<td>60</td>
</tr>
<tr>
<td>EP426</td>
<td>90</td>
</tr>
</tbody>
</table>

*Management practice is taken in the final year of the course.

Optional subjects (three to be taken)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP425</td>
<td>60</td>
</tr>
<tr>
<td>EP431</td>
<td>60</td>
</tr>
<tr>
<td>EP432</td>
<td>60</td>
</tr>
<tr>
<td>EP433</td>
<td>60</td>
</tr>
<tr>
<td>EP434</td>
<td>60</td>
</tr>
<tr>
<td>EP435</td>
<td>60</td>
</tr>
<tr>
<td>EP436</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 four hundred 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 normal requirement but who have had considerable relevant experience in manufacturing will be considered.

Course structure

Compulsory subjects

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP611</td>
<td>90</td>
</tr>
<tr>
<td>EP612</td>
<td>90</td>
</tr>
<tr>
<td>EP613</td>
<td>90</td>
</tr>
</tbody>
</table>

Optional subjects

Group 1

(Not more than one hundred and twenty hours to be taken)

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP431</td>
<td>60</td>
</tr>
<tr>
<td>EP432</td>
<td>60</td>
</tr>
<tr>
<td>EP436</td>
<td>60</td>
</tr>
<tr>
<td>SK527</td>
<td>60</td>
</tr>
</tbody>
</table>

Group 2

<table>
<thead>
<tr>
<th>Subject</th>
<th>Subject hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EP621</td>
<td>60</td>
</tr>
<tr>
<td>EP622</td>
<td>30</td>
</tr>
<tr>
<td>EP624</td>
<td>30</td>
</tr>
<tr>
<td>EP625</td>
<td>30</td>
</tr>
<tr>
<td>EP626</td>
<td>30</td>
</tr>
<tr>
<td>EP627</td>
<td>30</td>
</tr>
<tr>
<td>EP628</td>
<td>30</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 candidacy 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
Post-diploma Studies — Creative Engineering
Post-diploma Studies — Human 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 1982 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)

<table>
<thead>
<tr>
<th>First year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>year</td>
</tr>
<tr>
<td>AT194 Thinking and Communicating</td>
<td>60</td>
</tr>
<tr>
<td>CE111 Applied Mechanics</td>
<td>90</td>
</tr>
<tr>
<td>EE183 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 Practices and Processes</td>
<td>60</td>
</tr>
<tr>
<td>SCT94 Chemistry</td>
<td>90</td>
</tr>
<tr>
<td>SK194 Computations</td>
<td>30</td>
</tr>
<tr>
<td>SM194 Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SP194 Physics</td>
<td>90</td>
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</table>

Elective (1) from —

<table>
<thead>
<tr>
<th>Second year</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>year</td>
</tr>
<tr>
<td>CEF01 Civil Engineering — Structures</td>
<td>30</td>
</tr>
<tr>
<td>EE186 Electrical Engineering</td>
<td></td>
</tr>
<tr>
<td>ME165 Mechanical Engineering Systems</td>
<td></td>
</tr>
<tr>
<td>MP191 Manufacturing Engineering</td>
<td></td>
</tr>
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</table>

| General Elective             | 45    |

| Total                        | 750   |

<table>
<thead>
<tr>
<th>Semesters 3 and 4</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>year</td>
</tr>
<tr>
<td>MATH296 Mathematics</td>
<td>90</td>
</tr>
<tr>
<td>SK290 Computer Programming</td>
<td>30</td>
</tr>
<tr>
<td>ME261 Engineering Practices</td>
<td>90</td>
</tr>
<tr>
<td>ME211 Applied Mechanics</td>
<td>150</td>
</tr>
<tr>
<td>ME221 Engineering Systems</td>
<td>90</td>
</tr>
<tr>
<td>ME231 Instrumentation and Control Systems</td>
<td>30</td>
</tr>
<tr>
<td>MP284 Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>ME241 People-environment Systems</td>
<td>60</td>
</tr>
<tr>
<td>BS294 Managerial Economics</td>
<td>30</td>
</tr>
<tr>
<td>ME271 Design for Industry</td>
<td>90</td>
</tr>
<tr>
<td>General Elective</td>
<td>45</td>
</tr>
</tbody>
</table>

| Total                        | 750   |
Students may undertake only one general study elective subject offered by other faculties under the title 'General Elective'. The other subjects are obligatory.

### Third year

<table>
<thead>
<tr>
<th>Semester 5</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME391 Industrial Experience</td>
<td>840</td>
</tr>
</tbody>
</table>

### Semester 6

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM390 Education</td>
<td>45</td>
</tr>
<tr>
<td>ME311 Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>ME321 Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME331 Instrumentation and Control Systems</td>
<td>30</td>
</tr>
<tr>
<td>MP364 Engineering Materials</td>
<td>45</td>
</tr>
<tr>
<td>ME341 People-environment Systems</td>
<td>45</td>
</tr>
<tr>
<td>MP314 Manufacturing Technology</td>
<td>45</td>
</tr>
<tr>
<td>ME371 Design for Industry</td>
<td>45</td>
</tr>
</tbody>
</table>

All subjects are obligatory.

### Fourth year

<table>
<thead>
<tr>
<th>Semester 7</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM490 Mathematics</td>
<td>45</td>
</tr>
<tr>
<td>ME411 Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>ME421 Energy Systems</td>
<td>30</td>
</tr>
<tr>
<td>ME431 Instrumentation and Control Systems</td>
<td>30</td>
</tr>
<tr>
<td>BS490 Decision Analysis and Financial Management</td>
<td>30</td>
</tr>
<tr>
<td>MP484 Engineering Materials</td>
<td>30</td>
</tr>
<tr>
<td>ME441 People-environment Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME451 Technical Planning and Sales Engineering</td>
<td>30</td>
</tr>
<tr>
<td>MP414 Manufacturing Technology</td>
<td>30</td>
</tr>
<tr>
<td>ME471 Design for Industry</td>
<td>45</td>
</tr>
<tr>
<td>ME481 Engineering Investigation</td>
<td>45</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 8</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME491 Industrial Experience</td>
<td>840</td>
</tr>
</tbody>
</table>

1,215

### Fifth year

<table>
<thead>
<tr>
<th>Semester 9</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM598 Mathematics</td>
<td>45</td>
</tr>
<tr>
<td>ME511 Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>ME521 Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME531 Instrumentation and Control Systems</td>
<td>45</td>
</tr>
<tr>
<td>MR551 Decision Analysis and Financial Management</td>
<td>45</td>
</tr>
<tr>
<td>ME561 Engineering Plant and Equipment</td>
<td>45</td>
</tr>
<tr>
<td>ME552 Plant Information Systems</td>
<td>45</td>
</tr>
<tr>
<td>BS599 Marketing, Law and Technological Forecasting</td>
<td>45</td>
</tr>
<tr>
<td>ME581 Cooperative Project</td>
<td>75</td>
</tr>
</tbody>
</table>

### Degree conversion program (1980 syllabus)

**For diplomats**

For diplomats 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:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM398 Mathematics</td>
<td></td>
</tr>
<tr>
<td>ME331 Instrumentation and Control Systems</td>
<td></td>
</tr>
<tr>
<td>SM498 Mathematics</td>
<td></td>
</tr>
<tr>
<td>ME411 Applied Mathematics</td>
<td></td>
</tr>
<tr>
<td>ME431 Instrumentation and Control Systems</td>
<td></td>
</tr>
<tr>
<td>ME441 People-environment Systems</td>
<td></td>
</tr>
<tr>
<td>ME491 Industrial Experience</td>
<td></td>
</tr>
<tr>
<td>ME511 Applied Mechanics</td>
<td></td>
</tr>
<tr>
<td>ME541 People-environment Systems</td>
<td></td>
</tr>
<tr>
<td>ME581 Cooperative Project</td>
<td></td>
</tr>
</tbody>
</table>

### 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. Diplomates from other colleges are considered individually.

### Fifth year

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM598 Mathematics</td>
<td>45</td>
</tr>
<tr>
<td>ME511 Applied Mechanics</td>
<td>75</td>
</tr>
<tr>
<td>ME521 Energy Systems</td>
<td>45</td>
</tr>
<tr>
<td>ME531 Instrumentation and Control Systems</td>
<td>45</td>
</tr>
<tr>
<td>BS599 Marketing, Law and Technological Forecasting</td>
<td>45</td>
</tr>
<tr>
<td>ME581 Cooperative Project</td>
<td>75</td>
</tr>
</tbody>
</table>

375

Students must undertake only one general study elective offered by other faculties under the title 'General Elective'. The subjects ME511, ME541, ME581 are obligatory.

Students may undertake any three of the technical electives SM598, ME521, ME531, ME561, ME552 and BS599, including at least one of ME531, ME562 and BS599.
Degree of Bachelor of Engineering (Mechanical) (1971 Syllabus)

The details below apply to those students enrolled in the 1971 Syllabus course prior to 1982.

The third and fourth years of the degree course each comprise thirty weeks of formal studies in the institute and at least ten weeks working in industry in engineering activities guided by industry-based engineers and members of the department staff.

### Third year (1971 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering Physical Science</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Electronics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fluid Mechanics</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Machines</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Solid Mechanics</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Systems and Controls</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Thermodynamics</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>220</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering Art and Behavioural Science</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>History of Philosophy of Industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Human Engineering</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Industrial Economics</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Production Methods</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Work Study</td>
<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial Experience</td>
<td>350</td>
</tr>
</tbody>
</table>

Total Hours: 1,050

### Fourth year (1971 syllabus)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM405</td>
<td>Engineering Physical Science</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Fluid Mechanics</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Machines</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Mathematics</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Solid Mechanics</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Systems and Controls</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Thermodynamics</td>
<td>40</td>
</tr>
<tr>
<td>EM406</td>
<td>Industrial Technology</td>
<td>310</td>
</tr>
<tr>
<td>EM465</td>
<td>Engineering Art and Behavioural Science</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fine Arts</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Human Engineering</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Production Methods</td>
<td>40</td>
</tr>
<tr>
<td>EM407</td>
<td>Industrial Experience</td>
<td>350</td>
</tr>
</tbody>
</table>

Total Hours: 1,070

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM421</td>
<td>Process Heating</td>
<td>60</td>
</tr>
<tr>
<td>EM441</td>
<td>Air-conditioning I</td>
<td>90</td>
</tr>
<tr>
<td>EM442</td>
<td>Air-conditioning II</td>
<td>90</td>
</tr>
<tr>
<td>EM443</td>
<td>Refrigeration I</td>
<td>90</td>
</tr>
<tr>
<td>EM444</td>
<td>Refrigeration II</td>
<td>90</td>
</tr>
<tr>
<td>EM451</td>
<td>Project Work</td>
<td>120</td>
</tr>
</tbody>
</table>

Total Hours: 540

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM506</td>
<td>Maintenance Planning and Control</td>
<td>90</td>
</tr>
<tr>
<td>EM507</td>
<td>Maintenance Engineering 1</td>
<td>120</td>
</tr>
<tr>
<td>EM508</td>
<td>Maintenance Engineering 2</td>
<td>120</td>
</tr>
<tr>
<td>EM505</td>
<td>Materials and Processes</td>
<td>90</td>
</tr>
</tbody>
</table>

Total Hours: 420

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.

Syllabuses for third and fourth year subjects are listed in the 1981 Handbook.
Creative Engineering and Human Engineering

These part-time subjects are 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 in aspects of creative problem-solving and brainstorming techniques, or in human factors. These are relatively new and important areas in engineering.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Hours per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM461 Creative Engineering</td>
<td>90</td>
</tr>
<tr>
<td>EM462 Human Engineering</td>
<td>120</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>210</strong></td>
</tr>
</tbody>
</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, government, educational or research organisation.

Copies of the Statute for the degree of the Master of Engineering subject details

This section contains a brief description of the various subjects taught in engineering courses.

Some of these courses are at present being revised and it is important to look for the correct prefix (e.g. AT or GS in Liberal Studies) where it is listed in the particular course structure at the beginning of each section on engineering.

It should be noted that details of subjects taught by engineering departments to students in other courses (e.g. environmental health diploma which is offered by the Applied Science Faculty) are given in the handbook of the Faculty offering the course.

Subjects in this section are grouped in numerical order within the following codes:

<table>
<thead>
<tr>
<th>Code</th>
<th>Department or Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td>Liberal Studies</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>Electrical and Electronic Engineering</td>
</tr>
<tr>
<td>EG</td>
<td>Engineering Faculty</td>
</tr>
<tr>
<td>EM</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>EP</td>
<td>Manufacturing Engineering</td>
</tr>
<tr>
<td>GS</td>
<td>Liberal Studies</td>
</tr>
<tr>
<td>ME</td>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>MP</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>MT</td>
<td>Manufacturing Engineering</td>
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<tr>
<td>SA</td>
<td>Applied Science Faculty</td>
</tr>
<tr>
<td>SC</td>
<td>Chemistry</td>
</tr>
<tr>
<td>SM</td>
<td>Mathematics</td>
</tr>
<tr>
<td>SP</td>
<td>Physics</td>
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</tbody>
</table>

**General Electives**

Three hours per week for one semester.

All degree courses in engineering include two general elective subjects in later years. The number of electives offered each year depends on demand and availability of staff and facilities. The electives offered by the Liberal Studies Department of the Faculty of Arts under the subject codes AT297, AT397 and AT497 may include the following:

- Applied Psychology
- Law and Society
- Writing and Interpersonal Communication
- Writing for Pleasure and with a Purpose
- Technology and Social Change

**Note**

General electives may also be chosen from approved subjects in the Faculties of Arts, Arts, or Business. Students should contact the head of their awarding department for further information.

**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 skills they relate to engineering also form 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**

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 to community relations; influence of physical setting in communication. 

Behaviour of work groups: use of learning theories in acquiring new behaviours and modifying existing behaviours. Physiological factors in our sense of well-being—stress, anxiety, drugs and food. Minority groups in industry: groups which are affected by technological change, the unemployed, migrant women. Industrial democracy: decision-making, worker participation, industrial conflict and the ways to resolve conflict, and trade unions. 

Basic requirements are active participation in a seminar-type class setting and thorough knowledge of the textbook.

Textbook

AT691 Urban Sociology
Three hours per week for one semester
Assessment is continuous

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

This subject 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 public policy and its social impact. Where appropriate, policies are discussed in the world context.

Recommended reading

BS294 Managerial Economics
One hour per week for two semesters

A second-year subject in the degree course in manufacturing 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
Lowes, B. and Sparkes, J.R. Modern Managerial Economics. Lond., Heinemann, 1974

BS417 Energy Economics
Two hours per week for one semester

A subject in the graduate diploma course in energy systems which is concerned with the economic principles which influence demand, supply and pricing of energy resources.

Topics include: market mechanism and resource use; the projection of energy demands; production and cost in the short and long run; objectives of public and private enterprises; pricing strategies of public and private enterprises.

References

BS418 Energy Economics
Two hours per week for one semester

A subject in the graduate diploma course in energy systems aimed at equipping students with the economic principles which underlie efficient Investment decisions.

Topics it will cover include: economic analysis and investment systems decisions; interaction of demand, pricing and investment analysis; methods of investment appraisal; internal rate of return versus net present value; cost of capital; capital rationing; risk and uncertainty; community welfare and investment analysis — the rationale and methodology of social cost-benefit analysis; government policy and energy markets, e.g. resource taxes and mineral production subsidies.

References
Reed, P.W. The Economics of Public Enterprise. Lond., Butterworths, 1973
Rees, R. Public Enterprise Economics. Lond., Wiedenfeld and Nicholson, 1974
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
Neutze, M. Australian Urban Policy, Syd., George Allen and Unwin, 1978

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 — private 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

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 mechanics 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: general relationships, linear elastic parameters.

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 chain drives, pulleys and cable systems.

CE211 Structural Mechanics
Three hours per week for two semesters

A subject in the second year of the degree course in Civil Engineering which develops in students an understanding of the principles of mechanics as applied to structures.

After completing the subject students should be competent to analyse statically determinate planar structures and statically indeterminate beams.

Stress and strain: Biaxial loading, principal stresses, Mohr’s circle (for stress and strain, relationships between stress and strain, St Venant’s principle and stress concentrations).

Performance of loaded members: Torsion: elastic and inelastic stresses and deflections for circular and thin-walled closed-tube sections. Bending: internal actions, flexural stresses, shear centre, skew bending, composite sections, inelastic bending, beam deflections (DE, moment area, virtual work).

Columns: short columns, long columns (Kuiter and seent-solution)

Statically determinate structures: stability, determinancy, compound structures, trusses, simple frames: invert and plan layout.

Statically indeterminate structures: compound bars, continuous beams (force and slope-deflection methods).

CE231 Hydraulics
Three hours per week for two semesters

A subject in the second year of the degree course in Civil Engineering which develops in students an understanding of the principles of fluid mechanics. At the end of the course students should be able to analyse a wide range of simple engineering problems.

Static: pressure, thrust, buoyancy, stability of floating bodies.

Kinematics: continuity, Bernoulli equation.

Pipe flow: Darcy equation.

Momentum: forces on fittings, jet impact, hydraulic jump.


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. Students will be required to apply their knowledge to the solution of a variety of surveying problems.

Introduction: principles and types of surveys, source, destination, surveying, plotting, procedure, principles.

Distance measurement: chaining equipment, procedures and reductions. Principles and use of electronic distance measurement.

Levelling: calculation, use and adjustment of level types, booking and reduction of levels. Contouring: 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.

Computers: related to traverse reductions, setting out of works.

Surveying: subdivision of land, roads, shallow areas of various bodies, 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.

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 construction 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, 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.

EN33
**CE261 Transport Engineering**

Three hours per week for one semester

A subject in the second year of the degree course in civil engineering which introduces students to the civil engineering aspects of transportation. Upon completion of the subject, students will have gained a broad understanding of the highway and traffic elements which constitute the road system and the technology of the civil engineering aspects of the other modes.

Traffic engineering: basic studies and surveys, traffic control devices, principles of intersection design.

Design of roads and streets: cross-section, grading and crossfall, vertical and horizontal curves, drainage, erosion control.

Earthworks: embankment and cutting, load 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.

**CE281 Geoscience**

Three hours per week for one semester

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** (50 hours)

Significance of geology in civil engineering: principles of mineralogy, petrology, and paleontology, 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 and its implications.

**Soil mechanics** (40 hours)

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.

**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: fundamental, stability of members (columns, lateral buckling of beams, beam-columns); framed structures.

**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 analyze or design the components of these systems.

Pump theory, use, selection and performance.

Pipe systems, pressure conduits, equivalent pipes, reticulation networks, Hardy-cross analysis, water hammer.

Hydrology: rainfall and runoff, Rational formula, unit graph method

Infiltration principles.

**CE341 Surveying**

Five hours per week for one semester

A subject in the third year of the degree course in civil engineering which extends basic survey theory and shows how surveying is used in engineering projects.

Control surveys: trigonometrical and horizontal control surveys; introduction to map projections and the Australian map grid; precise surveys.

Photogrammetry: introduction to the use of photogrammetry in engineering.

Engineering surveys: introduction to cadastral surveying; theodolite surveys; triangulation of the road system; preparation of detail plans; volume measurement and computation.

Practical work.

**CE351 Structural Design**

Six 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** (45 hours)

Design principles; planning and choice of structural type; stability, rigidity, economic considerations.

Concrete: material properties; mix design; design in reinforced concrete; 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.

**CE361 Transport Engineering**

Four hours per week for one semester

A subject in the third year of the degree course in civil engineering which gives students a more in-depth understanding of the highway and traffic elements making up the road system. Upon completion of the subject, students will be 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: type, and control, Miller’s formula, co-ordination and computerized control.

Traffic aids and roadside 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, road surface 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.
Faculty of Engineering

CE411 Structural Mechanics
Four hours per week for one semester

A subject in the fourth year of the degree course in civil engineering which develops further students’ understanding of the principles of mechanics and their applications to structural analysis.

Plastic analysis: yield criteria (Tresca, von Mises); plastic theorems, collapse requirements; applications to framed structures, flat plates (yield line and strip methods).

Matrix analysis: direct stiffness method; plastic collapse of frames; introduction to analysis of continua (finite element).

Influence lines: Influence lines for indeterminate beams and frames.

Elastic stress analysis: Fundamental elastic equations (equilibrium, strain-displacement, compatibility, rheological) for two and three-dimensional elements; applications in flexure and torsion for solid, hollow and open sections, plate bending equations.

CE421 Planning
Two hours per week for one semester

A subject in the fourth year of the degree course in civil engineering which introduces students to the role of the engineer in urban and regional planning.

Town plan—its purpose and function of plan—its history of planning; neighbourhood plan—its regional planning; physical and socio-economic surveys in both urban and regional planning; structure of planning in Victoria.

Transport plan—introduction to transport planning; public transport systems; transportation systems management.

CE431 Water Engineering
Three hours per week for one semester

A subject in the fourth year of the degree course in civil engineering which introduces students to water engineering practice. On completion of the course, students should be able to apply water engineering principles to the design of distribution and disposal systems, and should have an understanding of water quality criteria and treatment methods.

Town water supplies: quantity and pressure requirements, supply mains, balancing storage, reticulation.

Storm-water drainage: urban drainage systems, retarding basins, culvert hydraulics.

Irrigation: methods, soil-water relationship, quantities.

Water quality: physical, chemical and bacteriological parameters.

Potable water treatment: methods, theory of sedimentation and filtration.

Waste water treatment and disposal: methods and their application, loading rates.

CE451 Structural Design
Six hours per week for one semester

A subject in the fourth year of the degree course in civil engineering which extends students’ knowledge of the principles of structural design in steel and timber and gives students practice in the application of these principles.

Design theory (45 hours)
Steel: properties, failure modes, elastic and plastic design of elements and assemblies; connections; fabrication; economics of fabrication methods; non-destructive testing.

Timber: properties, design methods; connection.

Design practice (45 hours)

Exercises in steel and timber structural design, which will include the use of computer programs where appropriate.

CE481 Geomechanics
Three hours per week for one semester

A subject in the fourth year of the degree course in civil engineering which develops further students’ understanding of the principles of geomechanics and their applications to structural analysis.

Plastic analysis: yield criteria (Tresca, von Mises); plastic theorems, collapse requirements; applications to framed structures, flat plates (yield line and strip methods).

Matrix analysis: direct stiffness method; plastic collapse of frames; introduction to analysis of continua (finite element).

Influence lines: Influence lines for indeterminate beams and frames.

Elastic stress analysis: Fundamental elastic equations (equilibrium, strain-displacement, compatibility, rheological) for two and three-dimensional elements; applications in flexure and torsion for solid, hollow and open sections, plate bending equations.

CE501 Investigation Project
Six hours per week for one semester

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 analytical 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
- Runge-Kutta 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 in 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 routing 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 which develops students' interest in environmental issues, and provides a factual outline knowledge of some pollution and waste disposal problems relevant to civil engineering, with particular emphasis on water quality. At the end of the course, students should have an appreciation of environmental effects and be able to perform basic computations in relation to water treatment and water pollution.

Environmental issues:
- Man's influence on the environment; pollution and its effects; conservation versus development; resources, recycling and re-use; environmental impact assessment; solid waste management and recycling; water quality, water treatment; waste water purification, reclamation and re-use; waste water collection systems; natural purification processes; water quality modeling.
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 computer-following models, applications. Queuing 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.

CE581  Geomechanics
Three hours per week for one semester
An elective subject in the fifth year of the degree course in civil engineering which extends students’ knowledge of geology and soil mechanics, introduces them to rock mechanics, and gives students some appreciation of the high level of experience and ‘art’ required to practise in the area of geomechanics.
Earth pressure problems, bored excavations, tie-back walls and soil anchors, introduction to soil dynamics, introduction to rock mechanics, selected topics in soil engineering: further aspects of engineering geology.

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 engineering 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 man 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.
Report writing: engineering 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 (22½ 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 (22½ 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 fields 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
A subject in the graduate diploma course in urban systems 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

Three hours per week for two semesters

A subject in the graduate diploma course in transportation systems planning practice, purpose of planning; basic surveys of planning; planning law; engineering for 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

Three hours per week for one semester

A subject in the graduate diploma course in transportation systems introduction 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.

Reference

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.

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 expedient movement of road traffic; volume, speed, density and headway relationships for traffic streams; gap, delay and vehicle absorption theory.

Three hours per week for one semester

A subject in the graduate diploma course in transportation systems 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.

Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction designed to develop an awareness of efficient site management techniques. Responsibilities of a project manager; responsibility of site engineer; construction site organisation; site office procedures; contractor/principal relations; arbitration; company structures; man management; negotiations; arbitration and conciliation.

Four hours per week for one semester

A subject in the graduate diploma course in civil engineering construction. The theory and practice of communications. Students take part in a program designed to increase their personal capacities to understand and communicate well at different levels of oral and written communication, particularly as project managers in the construction industry. To this end various techniques are used and 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 2

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 formation formulation and plan evaluation; urban gaming simulation; systems planning exercises.

References
Town and Country Planning Act, Victoria, Laws, Statutes, 1961
Urban Renewal Act, Victoria, Laws, Statutes, 1970
Victorian Planning Appeal, Melbourne, Law Book Co.

CE722  Environmental Systems Management

Two hours per week for one semester

A subject in the graduate diploma course in civil engineering.

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, G.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 civil systems.

Transport and land-use planning; new transport systems, traffic engineering and managemen, freeways, parking studies.

References
Analysis of Urban Development, Melbourne, Department of Civil Engineering, University of Melbourne, 1970
Dickson, J.W. Metropolitan Transportation Planning. N.Y., McGraw-Hill, 1975
Paquette, R.J. et al. Transportation Engineering Planning and Design N.Y., Ronald, 1972
Trowbridget 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 arm 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.

Health Act, 1958
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 — prestress, 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 Faulkes, 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-girders, beam-columns, base-plates, connections; plastic design of continuous beams, beam-column, frames; connection between rotation capacity requirements and spacing of lateral restraints; stability in low-rise buildings. Torsion in I-beams; box columns: reduction in load-carrying capacity of structures at collapse; plastic moment distribution, shake-down 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 arm 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 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 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.

**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 local centres — 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
- A1271 Urban Sociology
- BS861 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.

**References**
To be given by lecturer

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**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.

**Reference**
Fuchs, H.O. and Steidel, R.F. eds. 10 Cases in Engineering Design. Lond., Longman. 1973

**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, ROSTA 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 problems, braced excavations, (back walls and slol anchors; introduction to soil vibration 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 the course

A subject in the graduate diploma course in chemical engineering

Recommended reading
Russell, T.W.F. and Denn, M.M. Introduction to Chemical Engineering Analysis. N.Y., Wiley, 1972

Textbook

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, co-ordinates 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 backmix reactor analysis, reactor 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.

Recommended reading

Textbooks

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.

Recommended reading
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

Textbook

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
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967

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 tower diameter; penetration theory; absorption with chemical reaction; humidification and water cooling; cooling tower; drying; liquid-liquid extraction; solid-liquid extraction; crystallisation.

Recommended reading
Molyneux, F. Laboratory Exercises in Chemical Engineering. Lond., Leonard Hill, 1967
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 Soret, Ponchar-Savart methods, batch, and continuous operation; two component and multi-component distillation, solvent extraction; absorption, ion exchange and absorption. Duhring and Cox charts; boiling point elevation; distillation; boiling heat transfer; Coulson and McNaught correlation for tubular evaporators; evaporation single and multi-effect; thermal and mechanical recombination; economics.

Recommended reading
Moflem, E. 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

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, graphical 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

Reference
Smith, K.J., Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

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
Smith, K.J., Circuits, Devices and Systems. 3rd edn, N.Y., Wiley, 1976

EE257 Electrical Design
Three hours per week for two semesters

References
Say, M.G. Alternating Current Machines. Lond., Pitman, 1976
**EE284** 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.

Introduction to microprocessors: Programming

Overview of transducers: Interpretation of output data

Classroom demonstrations and practical work.

Reference


**EE285** Electromagnetic Devices

Three hours per week for two semesters

A second-year subject in the degree course in electrical engineering.

Magnetic circuits: reluctance, permeance, and inductance of magnetic circuits of series and parallel form.


Phasor diagram: The practical transformer, equivalent circuit, voltage regulation, efficiency.

Introduction to rotating machinery: Construction and principles of operation of three-phase induction machines, direct current machines and synchronous machines.

References


**EE287** 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. JFET, JFET junction transistor theory: combinational and sequential digital logic. BJT, non-linear applications. Amplifiers, BJT, linear applications. Field effect transistor, integrated circuits, negative feedback, oscillation.

References


**EE290** Environmental Engineering

One hour per week for one semester

A second-year subject in the degree course in electrical engineering.


**EE305** Electronics in Horticulture

Three hours per week for ten weeks

A subject conducted for students from Burnley Horticultural College.

EE339  Applied Electricity
Two hours per week for two semesters
A third-year subject in the diploma course in electrical engineering.
Review of alternating current circuits, phasors, circuit analysis and frequency response.
Introduction to Fourier and signal spectra.
Analogue measuring instruments — moving iron, moving coil and thermocouple instruments. Uses and limitations.
Digital transducers — principles and applications.
Digital measuring devices — counters, voltmeters, arithmetic units.
Electrical machines — introduction to three-phase networks, star and delta connections, AC machine principles, types of AC machines. DC machines. Transformers. Safety and earthing.

References
Smith, R.J. Circuits, Devices and Systems 3rd edn, N.Y., Wiley, 1976

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 pretention of results in class seminars and written reports. Technical report writing.

References
Selected Australian, British, DEF (Aust) and MIL Standards

EE383  Electromagnetic Fields
Two hours per week for one semester
A third-year subject in the degree course in electrical engineering
Static and quasi-static electric and magnetic fields: fields in materials; boundary conditions in dielectric, magnetic and conductive media; 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 waves, wave impedance, phase and group velocity, Poynting theorem and Poynting vector, plane wave penetration in good conductors, reflection and refraction of plane waves at boundaries between dielectrics and conductors; lossless transmission lines, characteristic impedance, phase and group velocity, reflections at mismatched terminations and discontinuities in lines, impedance matching, TEM waves between parallel perfect conducting planes, introduction to wave guides.

References

EE385  Electrical Power and Machines
Five hours per week for one semester
A third-year subject in the degree course in electrical engineering.
Introduction to power systems.
Transmission line parameters; line hardware and insulations; cables; symmetrical and unsymmetrical lines; parallel lines; line representation, circle diagram; power system representation; single line diagrams; per unit methods; voltage regulation.
Three-phase transformers; transformer connections; harmonic phenomena; synchronous machines; steady state analysis; cylindrical rotor and salient pole characteristics; two axis theory; transient and subtransient reactances, equivalent circuits; capability diagram; interconnected machines, induction machines; equivalent circuit; performance characteristics; effect of rotor resistance, starting and speed control.

References
Say, M.C. Alternating Current Machines 4th edn, Lond., Pitman, 1976

EE387  Electronics and Communications
Five hours per week for one semester
A third-year subject in the degree course in electrical engineering.
Analogue electronics including operational amplifiers, D/A, A/D conversion, data acquisition.
Digital electronics including LSI devices, microprocessors and digital signal processing.
Communications electronics with emphasis on the electronics of quantisation of signals, compression and expansion of signals, PCM and D.M systems, mixers and modulators.

References
Pearman, J.B. Microcomputer-based Design McGraw-Hill, 1977

EE389  Linear Control Systems
Four hours per week for one semester
A third-year subject in the degree course in electrical engineering.
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
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.
Optoelectronics: liquid crystal and light-emitting diode displays, opto
couplers and isolators, fibre-optics links.
References
Millman, J. and Halliday, C.G. 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
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,
coders, multiplexers, half and full adders.
Sequential logic: RS flip-flops; gated and clocked RS, D, and JK flip-
flops; applications to shift registers, counters; theory of unclocked
and clocked sequential circuits.
Introduction to microprocessor microprocessors.
References
Hill, F.J. and Peterson, G.K. Introduction to Switching Theory
and Logical Design. 2nd edn, N.Y., Wiley, 1974
McCluskey, E.J. Introduction to the Theory of Switching Circuits.
N.Y., McGraw-Hill, 1965
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
transistor, and FETs in switching circuits, static analysis of switching
circuits, clipping and clamping.
Bistable, monostable and astable circuits; analysis and design of
bistable, monostable and astable circuits; simple triggering methods;
saturating and non-saturating circuits; Hysteresis and Schmitt trigger.
Switching speed: the factors limiting switching speed: methods of
improving speed; saturating and non-saturating circuits.
Basic logic gate characteristics: simple g decks and transistor logic gate
circuits; loading, fan out, logic levels and level shifting, noise margin
propagation delay; threshold logic circuits.
Reference
Strauss, L. Wave Generation and Shaping. 2nd edn, N.Y., McGraw-
Hill, 1970
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
Cermi, R.H. and Foster, L.E. Instrumentation for Engineering
Management. N.Y., Wiley, 1982
Hoeschele Jr., D.F. Analog-to-Digital-Digital-to-Analog
Norton, H.N. Handbook of Transducers for Electronic Measuring
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
Faton, J.R. Electrical Power Transmission Systems. Englewood Cliffs,
N.J., Prentice-Hall, 1972
Fitzgerald, A.E. et al. Electrical Machinery. 3rd edn, N.Y., McGraw-
Hill, 1971
Thaler, G.J. and Wilcox, M.L. Electrical Machines. N.Y., Wiley, 1976
EE454  Electrical Design
A fourth-year subject in the degree course in electrical engineering
which is undertaken during the Industrial experience semester.
Quality control. Production planning and control. Probabilistic
reliability theory. Maintenance engineering. Human engineering:
anthropometry, vision, hearing, machine compatibility and
interaction.
Technical report writing: presentation of technical reports. During the
industrial experience semester, students may attend group seminars,
but will be provided with printed notes and other reference material
to enable them to complete the subject externally, by assignments.
References
Grant, E.L. and Leavenworth, R.S. Quality Control. 4th edn,
N.Y., McGraw-Hill, 1972
McCormick, E.J. Human Factors Engineering. 3rd edn, N.Y., McGraw-
Hill, 1970
Shooman, M.L. Probabilistic Reliability: An Engineering Approach
N.Y., McGraw-Hill, 1968
Selected Australian, British, DEF(Aust) and MIL Standards
EE455  Electrical Design
Three hours per week for one semester
A fourth-year subject in the electrical power stream of the degree course in electrical engineering.
Design techniques: technical limitations, standard frame sizes, materials, Economical conductor sizes.
Machine design: design of transformers, induction motors and DC motors.
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
White, D.R.; Electromagnetic Interference and Compatibility, Handbook Series Vols 1-3, Germantown, Maryland, Don White Consultants, 1971
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 electron-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
White, D.R.; Electromagnetic Interference and Compatibility, Handbook Series Vols 1-3, Germantown, Maryland, Don White Consultants, 1971

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.

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
**EE489 Control Systems**

Four hours per week for one semester

A fourth-year subject in both streams of the degree course in electrical engineering.

Classical design techniques for linear systems.


Multiple input/output control systems — representation analysis and design. Introduction to non-linear systems. Linearisation methods.

State space methods and the phase plane. Equivalent harmonic linearisation and the describing function. Digital and analogue computer methods in system design.

**References**

Ogata, K. Modern Control Engineering. Prentice Hall, 1970


**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 systems, use of standard components, hardwired logic, ROMs, and microprocessors. Interfacing and timing. Synchronous and asynchronous systems.

Application: are selected from the fields of timing and counting displays, control, communication, logic sequencing and signal transmission and reception.

Opportunity for students to design systems relevant to their own area of specialist interest.

**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 up specifications, system design, choice of components, testing and reporting performance. Each participant in the programme is presented with a seminar and a formal written report on the complete design.

Project topics are selected by participants in consultation with their 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.

Electrical 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; electric 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; air-handling units; cooling towers; control systems.

Total energy systems: combined process heating and power generation; waste heat recovery; integration of solar heating and centralised energy plant; reticulation systems for steam, hot and chilled water; selection and use of turbines; 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**


Writhehouse electric Corp. Transmission and Distribution Reference Book. 4th edn, Pittsburgh, Pa, 1964
**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; unconventional power plants; multiple-unit trains; light rail vehicles; aspects of electrified systems; advanced rapid transit and commuter systems.
- 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 inter-dependency; sensitivity studies related to the allocation of scarce resources with physical constraints.

**References**


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**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**


McColl, G.D. The Economics of Electricity Supply in Australia. MUP, Carlton, 1976


Beislon, J. Systems Milton, Keynes, The Open University T100 1, 1971


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**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 curves; 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: 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; flowing and clamped gas reclamation.
  - Fuel transport: rail and road transport of solid and liquid fuel; mechanical conveying; sea transport of oil and liquefied natural gas; terminal installations.

**References**


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**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**


McColl, G.D. The Economics of Electricity Supply in Australia. MUP, Carlton, 1976


Beislon, J. Systems Milton, Keynes, The Open University T100 1, 1971


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**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 engineering.

References

EE580 Computer Systems Engineering

Four hours per week for one semester

A fifth-year elective subject in the electronics stream of the degree course in electrical engineering.

Computer electronics: LS 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 fifth-year elective subject in the electrical power stream of the degree course in electrical engineering.


References

EE582 Communication Systems

Four hours per week for one semester

A fifth-year elective subject in the electronics stream of the degree course in electrical engineering.

Communications: network analysis, one and two port networks, filter approximations and realisations, active filters; spectral analysis, applications 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
Conor, F.R. Antennas. Lond., Edward Arnold, 1972

EE583 Electrical Machine Drives

Four hours per week for one semester

A fifth-year elective subject in the electrical power stream of the degree course in electrical engineering.


References
Ramshaw, R.S. Power Electronics Thyristor Controller Power 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 fifth-year elective subject in the electronics stream of the degree course in electrical engineering.


References
Peatman, J.B. Microcomputer Based Design. N.Y., McGraw-Hill, 1977
EE585  Electrical Power Engineering
Eight hours per week for one semester
A fifth-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 power/frequency and reactive power/voltage.

References
Bewley, J.V. Travelling Waves on Transmission Systems. 2nd edn, N.Y., Dover, 1951

EE587  Electronic Engineering
Eight hours per week for one semester
A fifth-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, telephony, radio communications.

EE588  Electronics
Four hours per week for one semester
A fifth-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/negative feedback amplifiers, power amplifiers, analogue data acquisition, digital signal processing.

EE589  Control Systems
Four hours per week for one semester
A fifth-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.
Application to computer and microprocessor based systems.
Optimal control concepts: optimal and adaptive control strategies.
Stochastic signals and statistical design methods.
Computers in control system design; digital and hybrid.
Industrial control: industrial drives, process control systems, the use of digital control techniques.
Project — design of an industrial system.

References

EE501  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 review.
This subject may be undertaken over a period of two 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 McConkey, A. Applied Thermodynamics for Engineering Technologists — 5.1. Units. 2nd edn, Lond., Longmans, 1970

EM421  Process Heating
This part-time subject is for the graduate-diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to sixty hours of lectures, tutorials, seminars, visits and practical work.
Assessment is continuous throughout the course.

EM424  Energy Resources and Conversion
Four hours per week for one semester
A subject in the graduate diploma course in energy systems.
The course reviews 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
EM425 Environmental Engineering

Two hours per week for one semester

A subject in the graduate diploma course in energy systems

The syllabus outline is as follows: human comfort; atmospheric emissions; noise; environmental factors associated with power stations; transportation of liquid fuels

References


EM441 Air-conditioning 1

This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.


References

Stoecker, W.F. Refrigeration and Air Conditioning Tokyo, McGraw-Hill, 1971

EM442 Air-conditioning 2

This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. It follows on subject EM441. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

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 topics of air-conditioning systems; selection of systems. Refrigeration applied to air-conditioning systems — industrial, commercial, domestic and organisation.

References


EM443 Refrigeration 1

This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

The syllabus is as follows: properties of refrigerants, analysis of the 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

Stoecker, W.F. Refrigeration and Air Conditioning Tokyo, McGraw-Hill, 1971

EM444 Refrigeration 2

This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to ninety hours of lectures, tutorials, seminars, visits and practical work. Assessment is continuous throughout the course.

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

Stoecker, W.F. Refrigeration and Air Conditioning Tokyo, McGraw-Hill, 1971
Tables of Refrigerant Properties Swinburne College Press

EM451 Project Work

This part-time subject is for the graduate diploma in heating, ventilation, air-conditioning and refrigeration. The course amounts to one hundred and twenty hours of lectures, tutorials, project progress and evaluation. Assessment is continuous throughout the course instead of the traditional single final examination

The work involves design, construction, evaluation and/or testing. In varying proportions, of either equipment or plant relating to the field of heating, ventilation, air-conditioning and refrigeration.

EM461 Creative Engineering

This post-diploma subject aims at developing the latent abilities of engineers in the solution of open-ended problems. The course amounts to ninety hours including lectures, seminars, discussions and group working. Assessment is continuous throughout the course.

The course is essentially an evaluative one, and leads the participants through the series of techniques and methods which have been developed to aid creative production of alternate solutions. The participant also examines needs analysis, problem analysis, and evaluation, as well as functional aesthetics. Students are encouraged to develop techniques which suit their own temperament and abilities. Brainstorming techniques form an important part of the course.
EM462 Human Engineering
This post-diploma subject may be undertaken by graduates from most courses. The course amounts to one hundred and twenty hours, including lectures, demonstrations, tutorials, seminars and practical work. Assessment is continuous throughout the course.
The syllabus topics are similar to those from ME341, ME441 and ME541 but the theory is dealt with in a more rigorous manner and the seminar topics are closely allied to the industrial experience of the participants.

References

EM505 Materials and Processes
Three hours per week for two semesters
A subject in the graduate diploma course in maintenance engineering.
Processes for maintenance and repair associated with equipment restoration 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
A subject in the graduate diploma course in maintenance engineering.
Requirements of a rationally established maintenance department. Techniques 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
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 technique 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 feedback from in-service experiences is emphasised.

EM508 Maintenance Engineering 2
Four hours per week for two semesters
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

EP325 Industrial Management
Fifty-four hours
Assessment by test and class assignments
A fourth-year subject in the degree course in manufacturing engineering.
Managerial economics — financial management of assets, profit/volume relationships; product and investment appraisal: the Australian environment. Accounting — costing, budgeting; the balance sheet; the profit and loss account; analysis of performance. Values and attitudes in industry — particular attention is given to personal and group functions in industrial management.

Recommended text
Riggs, J.L. Production Systems. 2nd, N.Y., Wiley, 1976

EP335 Industrial Engineering
Fifty-four hours
Assessment by test and class assignments
A fourth-year subject in the degree course in manufacturing engineering involving a study of the principles and techniques of methods study and work measurement, human engineering and value analysis. The course will consider classical work study techniques and their application in industrial situations generally, and production management, in particular. Allied topics such as incentives, job evaluation and labour costs control are incorporated. Theoretical lecture work will be complemented by selected films, discussion and suitable practical work.

Recommended text
Dales, H.E. Work Measurement. Lond., Pitman, 1972
Lockyer, K.C. An Introduction to Critical Path Analysis. 3rd edn, Lond., Pitman, 1969
Widmire, D. A. Work Study and Related Management Services. 2nd edn, Lond., Heinemann, 1970
EP355  Design for Manufacture
Ninety hours
Assessment, tests, assignments and projects
A fourth-year subject in the degree course in manufacturing engineering.

References
British Standards Institution BS4500: 150 Limits and Fits. 1965-73
BS308: Engineering Drawing Practice. 1972
Thomas, L.F. The Control of Quality. Lond., Thames and Hudson, 1969
 Standards Association of Australia, AS B96c. Plain Limit Gauges. Limit and Tolerances. 1962

EP415  Production Technology
Sixty-three hours
A fourth-year subject in the degree course in manufacturing engineering (production technology stream).
Machine tools: modern capability, functional requirements, assessment of static and dynamic characteristics. Introduction to machine tool vibration. Deformation mechanics; further study of chip formation, tool life and testing, machineability, economic factors, analytical models. In-depth study of mathematical models and slip line field to forming and cutting. Relationship to industrial processes.

References
Galley, J.W. and Shotbolt, C.R. Metrology for Engineers — 5.1 Units. 3rd edn, Lond., Cassell, 1969
Haslehurs, M. Manufacturing Technology. 2nd edn, Lond., English Universities Press, 1972
Rowe, G.W. Elements of Metalworking Theory. Lond., Arnold, 1979

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

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; role of management. Organisation structures and relationship to planning; directing, communicating and controlling. Organisation structures: division of labour; job definitions; departmentalisation. Functions in industry. Financial forecasting; control of production; materials supply, personnel management; work study. Industrial legislation: historical survey; federal and state legislation; workers compensation, wage systems.

References
Byrt, W.J. and Masters, P.R. The Australian Manager. Melb., Sun Books, 1974
EP423  Financial Aspects of Industrial Management
Sixty hours
A subject in the graduate diploma course in industrial management

References

EP424  Human Relations in Industry
Sixty hours
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
A 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. Conciliation and arbitration law. Restrictive trade practice.

References
Keeling, 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 Employee and the Law. 3rd edn, Syd., Law Book Co., 1973

EP426  Management Practice
Ninety hours
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 subject 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., Gower Foundation, 1972
Yuill, B. Developing Managers in Organisations. Syd., Wesley, 1975

EP431  Production Management
Sixty hours
A subject in the graduate diploma courses in industrial management and manufacturing technology.
The subject covers aspects of production management as related to the manufacturing process. Production: factors of management techniques; methods of production; processes of control, documentation and control procedures; costing procedures and analysis of planning procedures; machine selection and replacement.
Modern trends: principles of automatic controls; effects of automation; computer control of production; operational research techniques as applied to production. Group technology.

Recommended text

References
Lockyer, K.G. Production Control in Practice. 2nd edn, Lond., Pitman, 1975
EP432  Work Study
Sixty hours
Assessment by tests, contribution to class discussions, plus nominated assignments.

An optional subject in the graduate diploma courses in industrial management and manufacturing technology.

The subject covers the principles, objectives and application of work study in the achievement of higher production within all types of business enterprise. While special emphasis is placed on methods analysis, task simplification and work measurement techniques, the course will also outline a number of associated disciplines such as plant layout, materials handling, logical thinking, feasibility studies, incentives and balanced labour levels related to budget and scheduling commitments.

The use of work study as a means to the effective utilisation of resources generally and particularly materials, is further defined

References

EP435  Physical Distribution Management
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
Altwood, P.R. Planning a Distribution System. Lond., Gower Press, 1971
Smykay, E.W. Physical Distribution Management. 3rd edn, Lond. and N.Y., Macmillan, 1973

EP436  Environmental Studies
Sixty hours
Assessment by project and test

An optional subject in the graduate diploma course 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 cutting, high speed machining, multi-point tools. Economics. Load bounding solutions to metal forming and cutting including axi-symmetric problems, extension of mathematical models to inhomogeneous deformation.

References
As for EP415.

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 union, wage administration, job enrichment. Industrial psychology, personnel assessment and evaluation, working conditions, modern theories, ethics.

References
Andrearts, H. and Rumholdt, B. Organisation Development. Melb., PPCA, 1976
Australian National Department of Labour. Job Enrichment and Job Satisfaction. Canberra, AGPS, 1974
Sykes, F.J. 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 (production technology stream) which is chosen by the student group from subjects offered by other departments, including Art, Business and Arts

This subject, offered by the Liberal Studies Department of the Faculty of Arts, 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.
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 the 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.

References
Buffa, E.S. Modern Production Management. 4th edn, N.Y., Wiley, 1973
Lockyer, K.G. Production Control in Practice. 2nd edn, Lond., Pitman, 1975

Design for Manufacture
Ninety hours (includes a thirty-six hour project in industry)
Assessment, tests, assignments and project

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 should 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.

Metal Working Technology
Ninety hours
Assessment, tests, assignments and laboratory work
A subject in the graduate diploma course in manufacturing technology.

References
Rowe, G.W. Principles of Industrial Metal Working Processes. Lond., Arnold, 1977

Polymer 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/compound used, the processing method and the design on product quality and economics. Structure and properties of plastics and rubber: polymer—structure and transition phenomena; important mechanical, physical and chemical properties; melt rheology, characterisation, testing and 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.
References
Butbridge, J.L. The Introduction of Group Technology. Lond., Heinemann, 1975
Savas, E.S. Computer Control of Industrial Processes. N.Y., Heinemann, 1975

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

EP622 Industrial Health
Thirty hours
Assessment by assignment
An optional subject in the graduate diploma course in manufacturing technology.
This subject develops an awareness in students of an industrial engineer's responsibility to the workforce and society, in the design of production or manufacturing plant. The method of teaching will be by group activity with guest lecturers where necessary.
Introduction: resume of legislation and regulations in the factory environment; the financial implications of poor health policies in the factory. Selected topics by group methods: ionisers and filters, noise, dust, light, heat and cold, toxic materials, exhaust emission, cutting fluids, effects on health, mechanism, control, treatment.
References
Gardner, W. and Taylor, P. Health at Work. Lond., Association Business Programs, 1975

EP623 Joining Technology
Thirty hours
Assessment is by assignment and laboratory work
An optional subject in the graduate diploma course in manufacturing technology.
This subject gives an overview of methods of joining and fastening available. In the course, exercises are carried out in which students determine the feasibility of several different methods of assembly in a particular case.

EP624 Oxide Technology (Glass)
Thirty hours
Assessment by assignment
An optional subject in the graduate diploma course in manufacturing technology.
In this subject the processing, selection and economics of commonly used glasses are examined.
Glasses: raw materials preparation and selection, melting and re-use of scrap, forming, types of glass and selection for products, furnaces.
References

EP625 Oxide Technology (Ceramic and Refractory)
Thirty hours
Assessment by assignment
An optional subject in the graduate diploma course in manufacturing technology.
This subject complements EP624 Oxide Technology (Glass) and considers the selection and processing of clay products, advanced ceramics and 'cerments'.
Reference

EP626 Sheet Metal Technology
Thirty hours
Assessment, tests, assignments and laboratory work
An optional subject in the graduate diploma course in manufacturing technology.
This subject is intended to complement EP611 Metal Working Technology.
References
Rowe, C. W. Principles of Industrial Metal Working Processes. Lond., Arnold, 1977
EP627  Low Cost Automation
Thirty hours
Assessment by assignments
An optional subject in the graduate diploma course in manufacturing technology.
This subject provides students with a basic understanding of low cost automation and its place in manufacturing industry. Students are able to design systems and compare the effectiveness of alternative methods.
Introduction to the concept of low cost automation (LCA): conversion from manual to automatic operation, examples of transition from manual to automatic control. Components of LCA: types of automation (e.g., feedback, sorting, etc); classification of LCA components. Logic design and basic functions: logic functions, how to use logic in design. Comparison of systems: comparison of electrical, electronic, fluidic, pneumatic, mechanical and hybrid systems. Applications in industrial processes: materials handling, inspection, assembly, storage, machine tools. Economics of LCA: automation and reliability, automation and economics, automation and labour.
Reference

EP628  Quality and Reliability Engineering
Thirty hours
Assessment, tests, assignments and laboratory work
An optional subject in the graduate diploma course in manufacturing technology.
This subject provides students with an introduction to and basic understanding of the techniques used in the quality and reliability functions of an industrial operation.
Statistical quality control: the concept of statistical control, process control charts for variables — control charts for mean and range; cumulative approaches; process capability, process control charts for attributes — control charts for number defective, concept of acceptance sampling, acceptance sampling by attributes; operating characteristics, curves, single, double, multiple and sequential sampling plans, acceptance sampling by variables; range and standard deviation methods, published plans, economy of acceptance sampling.
Reliability: definition of terms, the life characteristic, reliability prediction and testing, design and analysis of life tests, analysis of service return, graphical methods, e.g., Weibull, systems reliability. Bayes theorem, the use of redundancy design for reliability. Terotechnology: definition, fields of application, plant design and maintenance, replacement theory, maintenance policies, commissioning, monitoring and diagnostics.
Reference
Duncan, A.J. Quality Control and Industrial Statistics. N.J., Irwin, 1974

GS493  General Studies
Three hours per week for one semester
A fourth-year subject in the degree course in manufacturing engineering.
This subject is designed to encourage the student to be an on-going self-teacher. To this end the content is selected from a variety of sources. Topics covered include technological and social change and individual adjustment to this change, psychological aspects of communication, and creative use of stress.
The learning situation includes the use of audio-visual and film. Students are required to deliver a class paper as well as to participate actively in a seminar-type learning situation. Evidence of active reading in mutually agreed areas is required.
There is no prescribed preliminary reading.

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 the associate diploma course in production 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; convention, 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.
References
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists — S.I. Units. 2nd edn, Lond., Longmans, 1967
Joel, R. Basic Engineering Thermodynamics in S.I. Units. 3rd edn, Lond., Longmans, 1971
Wallace, F.J. and Linning, W.A. Basic Engineering Thermodynamics — S.I. Units. 2nd edn, Lond., Pitman, 1970

ME129  Engineering Principles: Heat
One hour per week for two semesters
A first-year subject in the associate diploma course in production engineering which provides a descriptive treatment of the transfer of heat and the use of heat to create mechanical work. Topics include properties of working substances, heat transfer, reciprocating machinery.

ME165  Mechanical Engineering Systems
Two hours per week for one semester
An elective subject in the first year of all engineering degree courses which aims to retain and develop natural interests and skills pertinent to engineering careers and to introduce engineering concepts regarding components and systems approaches.
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, information flows, control, power transmission and other areas.
Students are given the opportunity to be involved in realistic engineering concepts, techniques and procedures through a selection of small projects. Typical examples include work in solar energy, aerodynamic 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.
ME211  Applied Mechanics
Five 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 three parts:

Machines
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.

Fluid mechanics
A course of thirty hours involving treatment of fundamental fluid concepts, fluid statics, fluid dynamics, steady incompressible fluid flow.

References

ME219  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:

Machines
A course of sixty hours involving treatment of linear and angular systems, conservation of energy and momentum, impulse, free and forced single degree of freedom vibration.

Fluid mechanics
A course of thirty hours involving treatment of fluid properties, fluid statics, fluid dynamics, measuring devices, boundary layers, flow and pressure drop in pipes, the external characteristics of pumps.

References

ME221  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 correlations, entropy and irreversibility, availability of low grade energy, engine 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, combination and sequential logic, integrated circuits, counters, shift registers, clocks and arithmetic units.

References
Eastop, T.C. and McConkey, A. Applied Thermodynamics for Engineering Technologists — S.I. Units. 2nd edn. Lond., Longmans, 1970
Hughes, E. Electrical Technology — S.I. Units. 4th edn. Lond., Longmans, 1972

ME231  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.

ME241  People-environment Systems
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 sheet metal, electrical systems.
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.

References

ME311 Applied Mechanics
Five 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.

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 includes:
(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.

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 provides a foundation in the physical laws governing thermal energy transfer and conversion. To provide students with a logical explanation of features and characteristics of established and developing thermal plant and equipment.

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.

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.

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 content includes:

Machines
Response of machine elements to dynamic disturbances: tree, 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 of energy, energy losses and efficiency, characteristics of simple dynamic machines, system-matching, fluid drag, boundary layers and wakes.

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, thermoelectric 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
A fourth-year subject in the degree course in mechanical engineering designed to introduce the student to marketing and sales, and in particular to develop those skills necessary for co-ordinating technical planning in industry with the sales and other business requirements.
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 in 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, will be 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
A fifth-year subject in the degree course in mechanical engineering designed to provide students with a logical explanation of features and characteristics of established and developing 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
A fifth-year subject in 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
A fifth-year subject in 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.
A third-year subject in 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.
A third-year subject in 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 co-ordination between Swinhurne 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 emphasis 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 — as 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.

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
De Garmo, E.P. Materials and Processes in Manufacturing 5th edn, Lond., Collier MacMillan, 1979

MP103 Engineering Drawing and Graphics
Four hours per week for two semesters
A first-year subject in the associate diploma course in production engineering which is designed to equip students with the basic skills in technical sketching, engineering drawing, descriptive geometry, graphical problem-solving, and data presentation.

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 processes. Approximately sixty hours is involved in ‘hands-on’ work in Swinhurne workshops, thirty hours is spent on plant visits covering a broad selection of engineering industries, and the remaining time is used in explanation of the processes.

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
An elective subject in the five-year course in manufacturing engineering which is designed to equip students with a basic knowledge 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.

MP191 Manufacturing Engineering Elective
Two hours per week for one semester
Assessment, projects and reports
An elective subject in the fifth 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
Assessment by assignments
A second-year subject in the degree course in manufacturing engineering

References
Hazelhurst, M. Manufacturing Technology 2nd edn, Lond., English Universities Press, 1972
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.

Recommended text


Reference


MP251 Design for Manufacture

Three hours per week for two semesters
Assessment by assignments and examination

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.

Methodology, decision-making, Cost; for design, manufacturing, and design for manufacture.

Structure, properties and treatment of: materials, ferrous and non-ferrous; polymers, thermoplastic, thermosetting, elastomeric, ceramics — crystalline and non-crystalline; composite systems.

Welding and joining systems. Tribology.

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: materials, ferrous and non-ferrous; polymers, thermoplastic, thermosetting, elastomeric, ceramics — crystalline and non-crystalline; composite systems.

Welding and joining systems. Tribology.

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.

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, illow, stresses, distance, speed, acceleration, vibration, pressure, temperature, etc. Electrical, hydraulic, and pneumatic control devices; signal amplification, recording, and readout.

MP311 Manufacturing Technology (P)

Five hours per week for one semester
Assessment by assignment and test

A third-year subject in the degree course in manufacturing engineering.


MP312 Manufacturing Technology (M)

As for MP311

MP313 Manufacturing Technology (C)

Five hours per week for one semester
Assessment by assignment and test

A third-year subject in the degree course in manufacturing engineering.

Advanced dimensional metrology, as in MP311. Introduction to non-Newtonian flow. Advanced manufacturing technology, material and energy balances, prediction of physical properties of materials, dimensional analysis, phase diagrams and physical equilibria.

MP315 Production Machines

Two hours per week for two semesters
Assessment by projects and assignments

A third-year subject in the associate diploma course in production engineering.

The 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, transmissions, gearboxes. Tolerancing, jig and fixture design, degrees of freedom, principles of clamping and location, supports, tool-setting, loading and unloading, swarf clearance, gauge design, economics. Design of cutting tools: design and selection of tools, form tools, milling, drilling and broaching tools.
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 action, 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, warm and cold working.

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, painting, burnishing, chemical baths, coating and painting, nitriding.  
Flatness, straightness, length, measurement principles, instruments, standards, surface finish and form, thread measurement.

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, borer, lathe, mill, drill, shaper, diecasting, 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.

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-machine 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.

MP331 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.

References  

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.  
Basic for engineering design: kinematics of non-uniform motion, advanced machine elements, pumps, pressure vessels. Plant and systems design, quality and reliability, fundamentals of automation.
In also a third-year subject in the degree course in manufacturing engineering. Basic control theory, definitions, open and closed loop systems. 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. Applications to engineering problems.

**MP381 Systems Engineering**

Two hours per week for one semester

A third-year subject in the degree course in manufacturing engineering.

**References**


**SC194 Chemistry**

Three hours per week for two semesters

A first-year subject 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**


**SC571 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 SC362 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 microbiology, 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 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
Lehninger, A.L. Biochemistry, 2nd edn, N.Y., Worth, 1975

SC583  Physical Biochemistry
Two hours per week for two semesters
Prerequisite: SC582 Engineering Biochemistry
Assessment is made 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.

References

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 production engineering. Students will be expected to complete several programming assignments. These will involve writing programs and using or modifying existing programs.

SK298  Computer Programming
One hour per week for two semesters
A second-year subject in the degree course in 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 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 three-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.

SK427  Computer Applications
Three hours per week for one semester
Practical programming work
Assessment is by progressive assignments and major project
A fourth-year subject in the degree course in manufacturing engineering which consists of a selection from: advanced programming methods, algorithm evaluation, manufacturing engineering, computer and data base systems, hardware, operating systems, text editors, software libraries, networks and information services. Applications to design of manufacturing systems.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

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-sharing networks and information services.

Textbooks
Suitable textbooks and general reading will be advised during the lectures.

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. Applications: 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.
SM194 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
Addison-Wesley, 5th edn, 1979

SM292 Mathematics
Four hours per week of integrated instruction and
practice for two semesters
A second-year subject in the degree course including civil engineering.
Multiple integration, Vector calculus and application to fluid
mechanics, beam theory. Series solution of ordinary differential
equations. Matrix algebra. Fourier series and partial differential
equations. Statistics: distribution theory, estimation and hypothesis tests, linear
models.

References
Hildebrand, F.B. Advanced Calculus for Applications Englewood
Bajpai, A.C., Galus, J.M., Fairley, J.A. Statistical Methods for Engineers
and Scientists New York, Wiley, 1978
Kreyszig, E. Advanced Engineering Mathematics 4th edn, New
York, Wiley, 1979

SM294 Mathematics
Four hours per week of integrated instruction and
practice for two semesters
A second-year subject in the degree course in electrical engineering
Boolean algebra. Multiple integration and coordinate systems.
Mathematics of reliability and sampling. Differential equations. Linear
algebra. Vector field theory.

SM296 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
Kreyszig, E. Advanced Engineering Mathematics 4th edn, London,
Wiley, 1979
Walpole, R.E. and Myers, R. Probability and Statistics for Engineers
Spiegel, M.R. Mathematical Handbook N.Y., McGraw-Hill (Schaum),
1969

SM298 Mathematics
Three hours per week of integrated instruction and
practice for two semesters
A second-year subject in the degree course in mechanical engineering
Multiple Integration. Statistics, descriptive and inferential, including
correlation and regression. Vector differential calculus. The matrix
eigenvalue problem. The solution of linear differential equations

References
Bajpai, A.C., Galus, J.M., Fairley, J.A. Statistical Methods for Engineers
and Scientists, New York, Wiley, 1978

SM311 Engineering Mathematics
Two hours per week for two semesters
A third-year subject in the associate diploma course in production
engineering.

Textbook
Mendelson, E. and Schaeffer, R.L. Mathematical Statistics with
Applications, North Scituate, Mass., Duxbury, 1973

SM392 Mathematics
Three hours per week of integrated instruction and
practice for one semester
A third-year subject in the degree course in civil engineering.
Optimisation, interpolation and approximation. Ordinary differential
equations: finite difference methods for initial and boundary value
problems. Introduction to finite element methods. Linear
programming.

SM396 Mathematics
Four hours per week of integrated instruction and
practice for one semester.

Textbook
Mendelson, H.W. and Schaeffer, R.L. Mathematical Statistics with
Applications, North Scituate, Mass., Duxbury, 1973

SM398 Mathematics
Three hours per week of integrated instruction and
practice for one semester.

Textbook
Mendelson, H.W. and Schaeffer, R.L. Mathematical Statistics with
Applications, North Scituate, Mass., Duxbury, 1973

References
Kreyszig, E. Advanced Engineering Mathematics 4th edn, London,
Wiley, 1979
Walpole, R.E. and Myers, R. Probability and Statistics for Engineers
Spiegel, M.R. Mathematical Handbook N.Y., McGraw-Hill (Schaum),
1969
SM402 Mathematical Methods
Forty-five hours for one semester
Prerequisite: SM209 and SM305
Assessment is continuous and/or by examination.
A fourth-year subject in the degree course in manufacturing engineering.
Topics include selections from: linear programming, integer programming, quadratic programming, dynamic programming, calculus of variations and other optimization techniques; introduction to queueing theory; revision and extension of Laplace transforms.

Textbook

References

SM492 Mathematics
Three hours per week for one semester
A subject in the fourth year of the degree course in civil engineering.
Matrix algebra: large linear systems.

SM494 Engineering Mathematics
Three hours per week of integrated instruction and practice for one semester
A fourth-year subject in both streams of the degree course in electrical engineering.
Functions of a complex variable, conformal mapping, inversion of Laplace transforms. Statistical decision theory.

SM498 Mathematics
Three hours per week of integrated instruction and practice for one semester
A fourth-year subject in the degree course in mechanical engineering.
Fourier transforms. The calculus of variations leading to Lagrangean dynamics; the method of weighted residuals. Stochastic modelling. Multiple regression.

SM598 Mathematics
Three hours per week of integrated instruction and practice for one semester
A final-year subject in 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 distributions, 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.

References
Mendenhall, W. Introduction to Probability and Statistics. 4th edn, Calif., Duxbury, 1974
Mendenhall, W. Introduction to Linear Models and the Design and Analysis of Experiments. Calif., Duxbury, 1968

SM623 Engineering Mathematics
Three hours per week for two semesters
Assessment by examination, and class assignments throughout the semesters
A subject in the graduate diploma course in civil engineering.
Topics include selections from: FORTRAN programming, numerical analysis, advanced calculus, differential equation theory, statistics, linear algebra, engineering economics, operations research, classical optimization, variational calculus with emphasis on approximate methods.

References
Weinstock, F. Calculus of Variations. N.Y., McGraw-Hill, 1952

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 fission and fusion.

SP404  Engineering Physics
Two hours per week
Assessment is by examination
A fourth-year subject in the degree course in electrical engineering.
Electromagnetic waves: Maxwell’s equations; propagation;
application to communication systems; fibre optics; thin films; special
relativity; Michelson-Morley experiments; application to
communication and energy conversion.
Nuclear physics: nuclear structure, properties, stability, decay and
reactions. Instruments and accelerating machines used in nuclear
physics. Thermonuclear energy from fission and fusion.

Textbook
There is no prescribed text.

Building Surveying subject details
The diploma course in building surveying is an inter-
disciplinary course which is co-ordinated by the Civil
Engineering Department of the Faculty of Engineering.
Subjects in this section are grouped in numerical order within
the following codes:

Code  Department or Faculty
AT  Liberal Studies Department
BE  Business Faculty
CE  Civil Engineering Department
ME  Mechanical Engineering Department
MP  Manufacturing Engineering Department
SM  Mathematics Department
SP  Physics Department
TB  Building Division (Swinburne Technical College)

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 relations: arguing points of view, conduct of meetings.
Language and social context. Committee reports.

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 relations: working with committees, minutes of meetings,
conduct of meetings.
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 their origins and operations and the use of law in their personal, civic and business affairs.

The concept of law, sources of law, origin and development of common law and Australian law, hierarchy of courts, the branches of law and place of business law. The doctrine of precedent. Statutory interpretation. Subordinate legislation. Studies of relevant case law and place of business law. The doctrine of precedent. Statutory
nuisance and occupiers liability.

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.

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.


CE252 Structural Design 1
Four hours per week for two semesters
A second-year subject in the diploma course in building surveying, which develops in students an appreciation of the action of structural components and of complete structures and to introduce students to methods of analysis available to designers.


Behaviour of structures: the modes of structural action of the major types of structures, emphasising the relationship between deflections and internal forces and stresses for tension and compression structures, trusses, beams and frames, space structures and combined forms.

Introduction to structural analysis, introduction to the important methods of analysing redundant structures and connections and calculating structural deflections.

Structural design: the design process, design methods, stability of structures, checking of structural designs.

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.


CE282 Geomechanics 1
Four hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to provide a building surveyor with the necessary knowledge of geomechanics to enable him to perform his duties of inspection and approval of foundations and other earth works, properly.

Types of soil and rock.
Stresses in soils: geostatic, load induced, hydrostatic.
Strength of soils: behaviour of clays, sands and mixed soils.
Field and laboratory tests.

Soil water: permeability, effect of moisture content on strength Foundations: introduction to bearing capacity, settlement and foundation design. Approval of foundations.

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 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.
CE352 Structural Design 2
Five hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to consolidate 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

CE402 Professional Projects
Three hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further.
Preparation of a written report on material submitted for a building permit or alternatively preparation and assembly of documents to be submitted for a building permit.
Preparation of a written report on an approved project topic relevant to the course. Students are required to deliver a summary of their reports to their peers, academic staff and guests as a part of their assessment.

CE442 Urban Planning 2
Two hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further.
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 (BAYAC and Bains Reports).

CE452 Structural Design 3
Four hours per week for one semester
A final-year subject in the diploma course in building surveying, designed to consolidate and integrate the various strands of the course and to develop students' self-education and communication skills further.
Preparation of a written report on material submitted for a building permit or alternatively preparation and assembly of documents to be submitted for a building permit.
Preparation of a written report on an approved project topic relevant to the course. Students are required to deliver a summary of their reports to their peers, academic staff and guests as a part of their assessment.

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-stress prestressed structures, etc.
Precast and pre-fabricated structures.
Demolition regulations, methods, equipment, shoring, design for demolition, problems with prestressed buildings.
Excavation practice: methods, equipment, rock excavation, trenching.
Crane and lifting appliances.
Hydrology, surface and sub-surface 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.

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, 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.
Acoustics: basic principles, noise protection. Interpretation on regulations, means of overcoming problems.
Personal movement systems: lifts, escalators, walkways.
Ergonomics: effects of features of building services on human performance and comfort, special arrangements for the physically handicapped, system effects of various services.
Fire protection: human behaviour in fires, cause of fires and the way fires develop. Design for fire protection. The roles of building surveyor, engineering, architect, builder and legislative authority.
Fire services: detectors, monitors, control, alarms, sprinkler systems, smoke control.
Electrical services: basic principles, motors, generators, cables, ducts, wiring, electrical safety, illumination, emergency supplies.

ME169 Building Services 1
Three hours per week for two semesters
A final-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.
Acoustics: basic principles, noise protection. Interpretation on regulations, means of overcoming problems.
Personal movement systems: lifts, escalators, walkways.
Ergonomics: effects of features of building services on human performance and comfort, special arrangements for the physically handicapped, system effects of various services.
Fire protection: human behaviour in fires, cause of fires and the way fires develop. Design for fire protection. The roles of building surveyor, engineering, architect, builder and legislative authority.
Fire services: detectors, monitors, control, alarms, sprinkler systems, smoke control.
Electrical services: basic principles, motors, generators, cables, ducts, wiring, electrical safety, illumination, emergency supplies.

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 equipment used to achieve these. Thermal equipment and human loads. Ventilation. Solar heating. Passive and active.
Specialty services: ventilated compressed air, vacuum lines, standby generating sets.
Provisions for controls, adjustments, inspection and maintenance.
Electrical services: electrical circuits, electrical equipment, building supplies, electrical safety, illumination and emergency supplies.
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.

The solid state: bonding, phases, solid solutions, metal crystal structures, polymer structures, silicate structures. Equilibrium: phase relationships and equilibrium diagrams. Mechanical properties: deformation and fracture, non-destructive testing.


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 different joining systems including welding, adhesive bonding, soldering, brazing, mechanical fasteners, comparative costs of various joining methods.

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, distributions; statistical inference. Numerical methods: solution of equations — direct and iterative methods for linear and non-linear equations. Approximate integration: trapezoidal and Simpson methods. Solution of differential equations: basic methods including Runge-Kutta. Calculus: functions and their inverses, graphs; differentiation; integration methods, use of tables; partial differentiation; differential equations, concepts, direct 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 materials described above; selected exercises directly relevant to building surveying.

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.

TB701  Building Structures 1

Four hours per week for two semesters

A first-year subject in the diploma course in building surveying, intended to develop in students an understanding of the general principles of construction of single- and double-storey residential buildings and to develop students' written and graphic communication skills and problem-solving abilities in this area.

The principles of construction of single- and double-storey residential buildings: basic structural systems, introduction to building trades, properties of materials used in domestic building (timber, plaster and reinforced concrete, masonry). Principles of fixing: mechanical fasteners, adhesives, timber joints. Domestic construction: details of foundations, footings, floors, walls, claddings and linings, roofing, plumbing, sanitary, kitchen, bathrooms, services, tiles, glazing, painting and decorating, builders' hardware. Regulations and codes governing residential construction. Drawing practice: sketches and finished drawings for a variety of domestic construction components and structures. Written and verbal reports on selected topics relevant to the syllabus.

TB702  Building Practice

Three hours per week for two semesters

A first-year subject in the diploma course in building surveying, designed to provide students with practical experience in the various trades and practices used in the construction industry. Practical work: carpentry and joinery, welding, plumbing, brickwork and masonry, electrical trades, fabrication and construction techniques in timber, concrete and steel.

TB703  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. Types of scaffolding systems, their erection and use. The Scaffolding Act 1970 and statutory rules and their interpretation. Practical erection of scaffolding. Safety in the use of scaffolding.
TB704  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.

TB710  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.

TB712  Statutory Control 2
Four hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to impart to students an appreciation of those administrative procedures and principles which particularly apply to the office of building surveyor.
Relevant acts, regulations and codes and related documentation will be emphasised.
Planning schemes.
Relationship and application of various enactments and regulations to the municipal authority and building surveyor.
Building regulations: contents and interpretation.

TB721  Building Structures 2
Six hours per week for one semester
A second-year subject in the diploma course in building surveying, designed to give students an understanding of the general principles and details of buildings with load-bearing walls up to three storeys and single-storey, wide span structures with framed or load-bearing walls.
Structural systems, basis of 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.

TB741  Building Structures 3
Six hours per week for one semester
A third-year subject in the diploma course in building surveying, designed to give students an appreciation of the general principles, structural details, and associated services for multi-storey framed buildings.
Drawing practice: finished drawings and sketches of a variety of structures and details from the above topics. Written reports on selected topics requiring collection of data and library research will form part of the assessment.
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Entrance requirements

Apprenticeship courses

be eligible to enter an apprenticeship in any of the trades which a course is offered at Swinburne, a candidate should at least thirteen 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, 500 Bourke 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 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, 1981. The college cannot guarantee places for Knox Region Technical School students whose applications are received after 8 December, 1981.

All other applicants should obtain forms from the college. The closing date is 10 February, 1982 although applications received prior to 8 December, 1981 will be given preference.
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 1982 had not been determined. In 1981 the fees were:

- Full-time: $51.00
- Part-time: $22.00

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.

Office hours

The Swinburne Technical College office is open from 8.45am-8.00pm Monday to Thursday. 8.45am-5.00pm 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 change of enrolment form which is available from the student's department and lodge it at the Main Office (66 Park Street) within seven days.

Students wishing to record some other enrolment change, e.g. address, employer, should consult the Main Office. Students who at any time believe that college records may not show their current address should notify the Main Office (66 Park Street).

Students who fail to notify the Main Office of withdrawal of a subject or cancellation of enrolment:

(a) by the end of term 1 for subjects with a mid-year final examination, and

(b) by the end of term 2 for subjects with an end of year final examination,

have the result 'withdrawal prior to completion of subject' recorded for the subjects affected.

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
Students who are absent from an examination due to illness or other reason and who wish to apply for a special examination must apply through the Main Office. Such an application must be accompanied by evidence (e.g., medical certificate) that there was genuine inability to attend the examination. The application must be lodged at the Main Office (66 Park Street), within forty-eight hours of the examination.

Students who are absent from an examination through misreading the time-table are not automatically entitled to a special examination. Students in this position should contact the head of their awarding department.

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 approximately two weeks after the particular examination has been held. To ascertain from Main 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).

Awards

Students anticipating completion of course at the end of 1981
Students who anticipate completion of the academic work for their courses at the end of 1981 and wish for a consolidated statement of results — indicating subjects passed and those still required to complete their courses, are advised to apply now.

This statement in conjunction with the computer-printed certificate of official results, should be sufficient for employers etc. to confirm that the course is complete or otherwise.

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

Conferring of certificates
Students eligible to receive certificates are required to make application on the form prescribed, available from the Main Office (66 Park Street). 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 the following year.

Education Department examinations
A re-mark of an external paper may be obtained on the payment of a fee of $10.25 and the fee paid to: The Cashier, Education Department, Nauru House, 80 Collins Street, Melbourne 3000 (Examinations Branch). Student name, identity number and subject details must be quoted.

Applications for a re-mark must be made within thirty days of the date upon which the relevant examination results are published.

The following marking scheme is used by the Technical College:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>75–100%</td>
</tr>
<tr>
<td>Pass</td>
<td>50–74%</td>
</tr>
<tr>
<td>Supplementary (Externally assessed)</td>
<td>35–49%</td>
</tr>
<tr>
<td>Not completed</td>
<td>NC</td>
</tr>
<tr>
<td>Withdrawn</td>
<td>W</td>
</tr>
</tbody>
</table>

The following marking scheme is used by the Technical College:
Swinburne Technical College Computer Service

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 Model 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. Supervisor: Lee Collier, BSc, DipEd, AACS.

Living allowances

Information regarding a number of living allowance schemes and scholarships is available from the student counselling service. Application forms are also available.

With the approval of the Loan Fund Committee, long-term and short-term financial assistance can be obtained from the following loan funds:
- Commonwealth Help for Needy Students Loan Fund
- Swinburne Council Fund for Tertiary Orientation Program Students
- Student Aid Fund
- Student Union Short Term Aid Fund
- Gary Clegg Memorial Fund

Enquiries should be made to the student counselling service. Telephone 819 8025.

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 level. To be eligible, students must also meet certain requirements regarding previous study, other awards held, etc.

As from 1 January 1981 the following benefits are available subject to a means test:
- Maximum living allowance for dependent students at home for independent students
- Maximum allowance for dependent spouse
- Incidental allowance for dependent child
- CAE students
- Technical College students

Applications may be made enrolment in a course. Pamphlets and application forms are available from student counselling service or the Commonwealth Department of Education, 450 St. Kilda Road, Melbourne.

Adult Secondary Education Assistance Scheme (ASEAS)

This Commonwealth scheme provides assistance to students aged nineteen years or over at 1 January 1981 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 $660 p.a. 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.

National Employment and Training System (NEAT)

Under this scheme, the Commonwealth government retraining 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.

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.
Building Division

- Staff .................................. TC8
- Building courses ........................ TC8
- Plumbing and gasfitting courses ....... TC14
- Registration courses .................... TC13
- Subject details ........................ TC18
Building Division
Head
G.A. Martin, BA, BEd, MMS, MIIE, MAIB

Building Construction Department
Acting Head
E.A. Trotter, CertBuild, TTIC

Academic staff
A. Boltman, GradlEAust, DipEd, MIEAust
A.R. Cottle, DipBldg, DipEd, BuildForemanCert, ColWCert, BldgSurvCert, FAIBS
R.L. D’Angerville, TTIC
D. Day, TTIC
D.R. Dennie, TTIC
M.J. Finney, TTIC, DiplTT, ColWCert, MIBPS
A. Harris
D.G. Hendry, DipBldg, DiplEd, BldgSurvCert, BuildlnspCert, FAIBS, AAIIB, AAribA, MBS
H. Lovig
K. Major
J. Miller
S. Mitchell
V.N. Osterlund, TTIC, TechCert
A.L. Patience, DiplBldg, BEd, TTIC, TechCert, BuildSurvCert, MAICS, MAIB, MIAA
Z.P. Szrom, DiplBldg, TTTC
R.P. Ulbrick, TTIC, DiplTT, TechCert
C.W. Watson, ACTT

Plumbing and Mechanical Services Department
Head
E.C. Bird, TTIC, MIPA

Academic staff
J. Coghlan, TTIC, TechCert, MIPA
M. Dempsey
J.F.T. Gooding, TTIC, DepTT, TechCert
G.A. Grendon, TTIC
L.A. Griffin, TTIC
I. Heatley, TTIC, MIPA
R.C. Hill, TechCert, AssAIRAH
I. Holmes, TTIC
M.A. Kefford, TTIC, DiplTT
B.J. Morrison, TTIC
N.J. McBride, TTIC
G. Oldham, TTIC, DiplTT, CertServInst&Des, MIPA
G. Rees, TTIC
D. Rose, TTIC
J.B. Tobin, TTIC, TechCert
J.J. Walker, DiplTT, CertTech, TechCert, AssAIRAH
G.J. Williams, DiplTT
R. Wilson

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:
81112E Building Foreman
81113E Building Inspector
81111E Clerk of Works

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
81150C Design Drafting (Structural)

Design Drafting Course
To be eligible to undertake the structural design drafting course, students must be employed in appropriate drafting work.

Registration courses
Scaffolding course:
scaffolding subjects are conducted which meet the requirements of the scaffolding regulations.

Crane drivers, dogmen and crane chasers course and Riggers 1, 2, 3 and 4 course.

These courses meet the requirements of the Department of Labour and Industry regulations.

Enquiries: Mr. E.A. Trotter.
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.

Satisfactory completion of year nine in a technical school or an equivalent course, is the minimum standard, with passes in specified subjects. 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, felling 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 Single stair — timber and concrete
TB065 Mod. 15 Brick veneer construction and hand saw sharpening
TB066 Mod. 16 Hip and valley roofing
TB071 Mod. A51/B51 Concrete formwork
TB072 Mod. A52 Hip and valley roofing 1 (equal pitch)
TB073 Mod. A53/B53 Internal fixing
TB074 Mod. A56/B56/C56 Stair building 1
TB075 Mod. A57 Hip and valley roofing 2 (unequal pitch)
TB076 Mod. A58 Shoring, centres and levelling
TB077 Mod. B52 Formwork for concrete and systems
TB078 Mod. B55 Industrial roofing, trusses and ceilings
TB079 Mod. B57 Site works, setting out and levelling
TB080 Mod. B58 Large centres, shoring and trenches
TB081 Mod. C52/D52 Joinery 1 (doors, windows and louvres)
TB082 Mod. C53/D53 Joinery 2 (curved work)
TB083 Mod. C57 Stair building 2
TB084 Mod. C58 Stair building 3

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 some 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 ie. 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>TH145 Building English</td>
<td>2</td>
</tr>
<tr>
<td>TB322 Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB123 Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB126 Building Mathematics (T)</td>
<td>2</td>
</tr>
<tr>
<td>TB330 Building Science 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TB417 Building Surveying (T) Theory and Maths</td>
<td>5</td>
</tr>
<tr>
<td>TB222 Technical Reports (Building)</td>
<td>2</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>
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 (Building Surveyor) or other Certificate of Technology — Building course.

<table>
<thead>
<tr>
<th>Course structure</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>TB220  Building Science (T) A and B</td>
<td>2</td>
</tr>
<tr>
<td>TB222  Technical Reports (Building)</td>
<td>2</td>
</tr>
<tr>
<td>TB322  Building Construction 2A</td>
<td>2</td>
</tr>
<tr>
<td>TB323  Building Construction 2B</td>
<td>2</td>
</tr>
<tr>
<td>TB417  Building Surveying (T) theory and maths</td>
<td>5</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>TB426  Building Administration and Supervision</td>
<td>2</td>
</tr>
<tr>
<td>TB419  Specifications, drawing, interpretation and co-ordination</td>
<td>2</td>
</tr>
<tr>
<td>TB436  Practical Inspection (building)</td>
<td>2</td>
</tr>
<tr>
<td>TB433  Scaffolding Inspection A</td>
<td>2</td>
</tr>
<tr>
<td>TB439  Scaffolding Inspection B</td>
<td>2</td>
</tr>
<tr>
<td>TB502  Quantity Surveying 1</td>
<td>2</td>
</tr>
<tr>
<td>TB110  Contracts and Building Law</td>
<td>2</td>
</tr>
<tr>
<td>TB120  Role and Function of a Clerk of Works (half-year)</td>
<td>2</td>
</tr>
</tbody>
</table>
### 81120G Building Higher Technician course (part-time)

This course applies to completing students only and is not available to new students.

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1</strong></td>
<td></td>
</tr>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
</tr>
<tr>
<td>TB314</td>
<td>Social Science (half-year)</td>
</tr>
<tr>
<td>TB120</td>
<td>Advanced Building Graphics (half-year)</td>
</tr>
<tr>
<td>TM120</td>
<td>Mathematics 1H</td>
</tr>
<tr>
<td><strong>Stage 2</strong></td>
<td></td>
</tr>
<tr>
<td>TB322</td>
<td>Building Construction 2A</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2B</td>
</tr>
<tr>
<td>TB341</td>
<td>Building Services</td>
</tr>
<tr>
<td>TM220</td>
<td>Mathematics 2H</td>
</tr>
<tr>
<td>TB242</td>
<td>Basic Quantities and Estimating (half-year)</td>
</tr>
<tr>
<td>TB243</td>
<td>Industrial Relations (half-year)</td>
</tr>
<tr>
<td><strong>Stage 3</strong></td>
<td></td>
</tr>
<tr>
<td>TB365</td>
<td>Building Science H (A and B)</td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
</tr>
<tr>
<td>TB366</td>
<td>Practical Structures</td>
</tr>
<tr>
<td><strong>Stage 4</strong></td>
<td></td>
</tr>
<tr>
<td>TB160</td>
<td>Site Organisation and Administration</td>
</tr>
<tr>
<td>TH116</td>
<td>Evolution of Building</td>
</tr>
<tr>
<td>Elective</td>
<td>2</td>
</tr>
<tr>
<td><strong>Stage 5</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Stage 6</strong></td>
<td></td>
</tr>
<tr>
<td>Electives (four)</td>
<td>8</td>
</tr>
</tbody>
</table>

### 81131B Building Surveyor Certificate (1967 syllabus)

This course applies to completing students only and is not available to new students.

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong></td>
<td></td>
</tr>
<tr>
<td>TB216</td>
<td>Building Construction 1A</td>
</tr>
<tr>
<td>TB217</td>
<td>Building Construction 1B</td>
</tr>
<tr>
<td>TB322</td>
<td>Building Construction 2A</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2B</td>
</tr>
<tr>
<td>TB341</td>
<td>Powers and Duties of a Municipal Building Surveyor Part 1</td>
</tr>
<tr>
<td>TB426</td>
<td>Building Administration and Supervision</td>
</tr>
<tr>
<td>TB429</td>
<td>Building Practice</td>
</tr>
<tr>
<td>TB435</td>
<td>Scaffolding Inspection A</td>
</tr>
<tr>
<td>TB439</td>
<td>Scaffolding Inspection B</td>
</tr>
<tr>
<td><strong>Group B</strong></td>
<td></td>
</tr>
<tr>
<td>TH4050</td>
<td>English</td>
</tr>
<tr>
<td>TB431</td>
<td>English Report Writing, Library and Thesis</td>
</tr>
<tr>
<td>TB425</td>
<td>Applied Mechanics</td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
</tr>
<tr>
<td>TB430</td>
<td>Foundations</td>
</tr>
<tr>
<td>TB431</td>
<td>Building Science 1A and B (building surveyors)</td>
</tr>
<tr>
<td>TB434</td>
<td>Powers and Duties of a Municipal Building Surveyor, Part 2</td>
</tr>
<tr>
<td>TB427</td>
<td>Building Construction 2C (structural analysis)</td>
</tr>
<tr>
<td>TB428</td>
<td>Building Construction 3C (theory of structure)</td>
</tr>
</tbody>
</table>

### 81133B Certificate of Technology — Building (Building Surveyor) (1976 syllabus)

<table>
<thead>
<tr>
<th>Course structure</th>
<th>Hours week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB316</td>
<td>Building Construction 1A</td>
</tr>
<tr>
<td>TB317</td>
<td>Building Construction 1B</td>
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<tr>
<td>TB322</td>
<td>Building Construction 2A</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2B</td>
</tr>
<tr>
<td>TB412</td>
<td>Building Construction 3A</td>
</tr>
<tr>
<td>TB413</td>
<td>Building Construction 3B</td>
</tr>
<tr>
<td>TH116</td>
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</tr>
<tr>
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</tr>
<tr>
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<tr>
<td>TB436</td>
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<tr>
<td>TB425</td>
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<tr>
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<tr>
<td>TB504</td>
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<tr>
<td>TB427</td>
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<td>TB428</td>
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### 81134B Certificate of Technology — Building (Estimating)

<table>
<thead>
<tr>
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<th>Hours week</th>
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<td>TB217</td>
<td>Building Construction 1B</td>
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<td>Building Construction 2A</td>
</tr>
<tr>
<td>TB323</td>
<td>Building Construction 2B</td>
</tr>
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<td>TB412</td>
<td>Building Construction 3A</td>
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<td>Communication</td>
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<td>TB480</td>
<td>Elements of Town Planning</td>
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</table>

### 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.
81135B Certificate of Technology — Building (Building Supervisor)

Course structure

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<tr>
<th>Unit</th>
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<td>TB421</td>
<td>Services in Building</td>
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<tr>
<td>TB366</td>
<td>Practical Structures and Practical Workshop</td>
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<tr>
<td>TB160</td>
<td>Site Organisation and Administration</td>
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<tr>
<td>TB242</td>
<td>Basic Quantities and Estimating (one semester)</td>
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<td>TB280</td>
<td>Specifications 1A and 1B</td>
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<td>TB120</td>
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<td>TB297</td>
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<tr>
<td>TM397</td>
<td>Structural Mechanics 3A and 3B</td>
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<tr>
<td>TB490</td>
<td>Foundations 1A and 1B</td>
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<tr>
<td>TB195</td>
<td>Structural Drafting 1A and 1B</td>
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<td>TB295</td>
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<tr>
<td>TB507</td>
<td>Structural Design Drafting 2C and 2D</td>
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</tr>
</tbody>
</table>

Electives

As approved by the head of the department (Usually taken from related certificate of Technology courses)

Hours

81150C Certificate of Technology — Design Drafting (Structural)

Career potential

This course is suitable for those seeking employment as structural design draftsmen in structural engineering situations. Similar opportunities may be available in architectural offices for structural design detailing.

Entrance requirements

Students must have passes at year eleven level in English, Technician Mathematics, Technician Science A, Technical Drawing, Workshop Practice, or approved equivalents.

Preference will be given to students employed in structural design drafting work.

Course structure

Completion of the course requires a total of thirty units consisting of twenty-eight core units and two elective units.

The course is available on a part-time basis, however, depending on enrolment, the first year may be available on a full-time basis.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Core subjects</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM120</td>
<td>Mathematics 2A and 2B</td>
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<tr>
<td>TM160</td>
<td>Physics 1A and 1B</td>
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<tr>
<td>TH116</td>
<td>Communication</td>
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<td>TB197</td>
<td>Structural Mechanics 1A and 1B</td>
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<td>TB297</td>
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<td>TB507</td>
<td>Structural Design Drafting 2C and 2D</td>
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</tr>
</tbody>
</table>

Electives

As approved by the head of the department (Usually taken from related certificate of Technology courses)

Enquiries

Further information may be obtained from the Swinburne Technical College Main Office, 819 8357-8, the acting head of the building construction department, Mr E. Trotter, 819 8500, or the Information Office, 819 8444.
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 fulfill 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 meet Department of Labour and Industry requirements 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 in 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, reconstruction or major repair work, but is not required to have the benefit of this supervision.

TB803 Riggers 3 Instruction sufficient to enable the scaffolder to erect, alter or dismantle heavy-duty suspended scaffolding and heavy-duty suspended swing-stage scaffolding.

TB804 Riggers 4 Instruction sufficient to enable the scaffolder 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 scaffolder to erect, alter or dismantle pole scaffolding, both tube, and timber and frame scaffolding.

TB902 Class 2 Instruction sufficient to enable the scaffolder to erect, alter or dismantle cantilever and bracket scaffolding.

81162B Scaffolding Construction (one semester)

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.
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 part-time Day release or 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.

**32CDA**

The third apprenticeship course 32CDA was introduced in 1980 as a pilot course under the Systems Approach to Learning Scheme.

This gives the students active participation with ‘On-site’ situations that they may encounter in plumbing installations, and meets the needs of the Industrial Training Commission of Victoria and the National Basic Trade Common Course in Plumbing and Gasfitting.

The students are required to attend part-time Block release for this course which comprises one thousand and forty hours of student learning over three stages. Stage 1 and 2 comprise eight hundred and fifty hours and make up the basic units. To complete the course, students in consultation with their employers and the College will select the final study area. Students may undertake any of the other alternative study areas in their own time.

Further details of this course are available from Mr E.C. Bird, Tel: 819 8518.

Entrance requirements

Satisfactory completion of year nine in a secondary school with passes in English, Mathematics, Science and Drawing.

Industrial Training Commission approval to enter the trade.

Technician courses

- **81212E Technician — Plant Services Detail Drafting**

The usual duration of the technician course is four years. With the exception of a two-hour class in the second year, the first two years of each course are common. Specialised subjects for each of the technician courses begin in the third year.

Apprentices who are taking a technician course concurrently with their daytime training and tradesmen undertaking the course as post-apprentice training will be required to attend evening classes. These are usually confined to two evenings per week.

Plant services detail drafting course

The usual duration of this course is three years. It is designed to train personnel in the preparation of detailed working drawings of heating, ventilating, air-conditioning and refrigerating systems and the essential services for private, commercial and industrial projects.

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**

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<thead>
<tr>
<th>Code</th>
<th>Module No. and Title</th>
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<tbody>
<tr>
<td>TP001</td>
<td>Drawing</td>
</tr>
<tr>
<td>TP002</td>
<td>2 Calculations, science and communication</td>
</tr>
<tr>
<td>TP003</td>
<td>3 Sanitary plumbing drainage welding and cutting</td>
</tr>
<tr>
<td>TP004</td>
<td>4 Roof plumbing and soldering</td>
</tr>
<tr>
<td>TP005</td>
<td>5 Water supply and gasfitting</td>
</tr>
<tr>
<td>TP006</td>
<td>6 Sheet lead and sheetmetal</td>
</tr>
<tr>
<td>TP007</td>
<td>7 Roof plumbing</td>
</tr>
<tr>
<td>TP008</td>
<td>8 Copper tube and mild steel sections</td>
</tr>
<tr>
<td>TP009</td>
<td>9 Drawing and building cost</td>
</tr>
<tr>
<td>TP010</td>
<td>10 Roof plumbing</td>
</tr>
<tr>
<td>TP011</td>
<td>11 Sheetmetal</td>
</tr>
<tr>
<td>TP012</td>
<td>12 Roof plumbing</td>
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<tr>
<td>TP013</td>
<td>13 Gasfitting and heaters</td>
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<tr>
<td>TP014</td>
<td>14 Welding and cutting</td>
</tr>
<tr>
<td>TP015</td>
<td>15 Mild steel sections</td>
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#### Sanitary General and Gasfitting

<table>
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<td>AS1 Sanitary plumbing</td>
</tr>
<tr>
<td>TP017</td>
<td>AS2 Drainage</td>
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<tr>
<td>TP018</td>
<td>AS3 Water supply</td>
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<td>TP019</td>
<td>AS4 Sheet lead</td>
</tr>
<tr>
<td>TP020</td>
<td>AS5 Copper tube and plastics</td>
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<td>TP021</td>
<td>AS6 Sanitary plumbing</td>
</tr>
<tr>
<td>TP022</td>
<td>AS7 Drainage</td>
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<td>TP023</td>
<td>AS8 Water supply</td>
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<td>TP024</td>
<td>AS9 Gasfitting</td>
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<td>TP025</td>
<td>AS10 Welding and cutting</td>
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<td>TP026</td>
<td>AS11 Sheet lead and plastics</td>
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<td>TP027</td>
<td>AS12 Mild steel sections</td>
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<td>TP028</td>
<td>AS13 Copper tube and special materials</td>
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<tr>
<td>TP029</td>
<td>AS14 Plumbing — Sanitary Theory 3 Final</td>
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<td>TP030</td>
<td>AS15 Plumbing — Sanitary General and Gasfitting Practice 3 Final</td>
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#### Course structure T23A

**Mechanical Services, General and Gasfitting**

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<td>TP030</td>
<td>Q52 Ventilating</td>
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<td>TP031</td>
<td>Q53 Water supply</td>
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<td>TP032</td>
<td>Q54 Mild steel pipe</td>
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<td>Q56 Heating</td>
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<td>TP035</td>
<td>Q57 Ventilating, air-conditioning and refrigerating</td>
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<td>TP036</td>
<td>Q58 Water supply</td>
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<td>TP037</td>
<td>Q59 Gasfitting</td>
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<tr>
<td>TP038</td>
<td>Q60 Welding and cutting</td>
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<tr>
<td>TP039</td>
<td>Q61 Mild steel pipe and plastic</td>
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<td>TP040</td>
<td>Q62 Mild steel section</td>
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<td>TP041</td>
<td>Q63 Copper tube special materials</td>
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<td>TP042</td>
<td>Q64 Plumbing — Mechanical Services Theory 3 Final</td>
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<tr>
<td>TP043</td>
<td>Q65 Plumbing — Mechanical Services General and Gasfitting Practice 3 Final</td>
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<td>TP044</td>
<td>Q66 Plumbing — Gasfitting Theory 3 Final</td>
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<tr>
<td>TP045</td>
<td>Q67 Plumbing — General Theory 3 Final</td>
</tr>
</tbody>
</table>

#### 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

**Plumbing**

<table>
<thead>
<tr>
<th>Code</th>
<th>Module No.</th>
<th>Stage No. and Title</th>
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<tbody>
<tr>
<td>TP901</td>
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<tr>
<td>TP902</td>
<td>2</td>
<td>Drainage (5 units)</td>
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<tr>
<td>TP903</td>
<td>3</td>
<td>Sanitary and Water Supply (16 units)</td>
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<tr>
<td>TP904</td>
<td>4</td>
<td>Gas and Water Supply (8 units)</td>
</tr>
<tr>
<td>TP905</td>
<td>5</td>
<td>Roof and Water Supply (10 units)</td>
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<td>TP906</td>
<td>6</td>
<td>Mechanical Services and Water Supply (9 units)</td>
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<tr>
<td>TP907</td>
<td>7</td>
<td>Sanitary</td>
</tr>
<tr>
<td>TP908</td>
<td>8</td>
<td>Gas</td>
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<td>TP909</td>
<td>9</td>
<td>Roof</td>
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</tr>
<tr>
<td>TP911</td>
<td>11</td>
<td>Gasfitting (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 week (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.

#### Alternate method
Technician course details

81210E Technician Certificate 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, to be eligible for the award of the certificate.

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.

Course structure

Area of study

<table>
<thead>
<tr>
<th>Group</th>
<th>Title</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 General</td>
<td>(For students without approved Form V English, Mathematics and Science)</td>
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<tr>
<td>TH140</td>
<td>English IT</td>
<td>2</td>
</tr>
<tr>
<td>TM130</td>
<td>Mathematics IT</td>
<td>2</td>
</tr>
<tr>
<td>TM170</td>
<td>Science (Physics) IT</td>
<td>2</td>
</tr>
<tr>
<td>Advanced or specialist units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TH1240</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 (Physics) 2T</td>
<td>2</td>
</tr>
<tr>
<td>Group 2 Related background studies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP237</td>
<td>Process Heating</td>
<td>2</td>
</tr>
<tr>
<td>TP238</td>
<td>Fluid Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>TP100</td>
<td>Plant Services Draughting</td>
<td>2</td>
</tr>
<tr>
<td>TB230</td>
<td>Building Science 1A and 1B</td>
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</tr>
<tr>
<td>Advanced or specialist units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP421</td>
<td>Site Supervision and Organisation (Foremanship)</td>
<td>2</td>
</tr>
<tr>
<td>TP310</td>
<td>Contracts and Building Law (Sub-contracts)</td>
<td>1</td>
</tr>
<tr>
<td>TP453</td>
<td>Mechanical Services Draughting</td>
<td>2</td>
</tr>
<tr>
<td>Group 3 General practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP358</td>
<td>Reticulated Systems IT</td>
<td>2</td>
</tr>
<tr>
<td>TP450</td>
<td>Instrumentation</td>
<td>1</td>
</tr>
<tr>
<td>Advanced or specialist units</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP456</td>
<td>Reticulated Systems 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP451</td>
<td>Electrical and Controls</td>
<td>1</td>
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<tr>
<td>Group 4 Specialist practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TP348</td>
<td>Air-conditioning IT</td>
<td>2</td>
</tr>
<tr>
<td>TP349</td>
<td>Refrigeration IT</td>
<td>2</td>
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<tr>
<td>Advanced or specialist units</td>
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<td></td>
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<tr>
<td>TP448</td>
<td>Air-conditioning 2T</td>
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<tr>
<td>TP449</td>
<td>Refrigeration 2T</td>
<td>2</td>
</tr>
<tr>
<td>TP452</td>
<td>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, to be eligible for the award of the certificate.

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.

Course structure

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours week</th>
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<tbody>
<tr>
<td>TH140</td>
<td>English IT</td>
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<tr>
<td>TM130</td>
<td>Mathematics IT</td>
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</tr>
<tr>
<td>TM170</td>
<td>Science IT</td>
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<tr>
<td>Trade subjects completed or modules 1-15.</td>
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<tr>
<td>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>
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<tr>
<td>Trade subjects completed or modules 16-28.</td>
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<tr>
<td>TP358</td>
<td>Reticulated Systems IT</td>
<td>2</td>
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<tr>
<td>TP335</td>
<td>Gas Technology IT (fundamentals of gas)</td>
<td>2</td>
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<tr>
<td>Technology A and B</td>
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<tr>
<td>TP434</td>
<td>Gas Technology 2T A (gas control techniques 1A and 1B)</td>
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<tr>
<td>TP435</td>
<td>Gas Technology 2T B (gas control techniques 2A and 2B)</td>
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<tr>
<td>TE161</td>
<td>Electronics B*</td>
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<tr>
<td>TP434</td>
<td>Gas Technology 2T A (gas control techniques 1A and 1B)</td>
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<tr>
<td>TP435</td>
<td>Gas Technology 2T B (gas control techniques 2A and 2B)</td>
<td>2</td>
</tr>
</tbody>
</table>

*Electronics A and B equal TE326 Industrial Electronics 1T
**81213E  Technician — Plumbing (Sanitary)**

**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.

**Course structure**

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Basic Units</th>
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</thead>
<tbody>
<tr>
<td><strong>Group 1 General</strong></td>
<td></td>
</tr>
<tr>
<td>(For students without approved Form V English, Mathematics and Science)</td>
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<tr>
<td>TH140 English IT</td>
<td>7</td>
</tr>
<tr>
<td>TM130 Mathematics IT</td>
<td>2</td>
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<tr>
<td>TM170 Science (Physical) IT</td>
<td>7</td>
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<tr>
<td><strong>Advanced or specialist units</strong></td>
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<tr>
<td>TM230 Mathematics LT</td>
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<tr>
<td>TM270 Science (Physical) LT</td>
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<tr>
<td>TP210 Communication and Technical Reports</td>
<td>2</td>
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</tbody>
</table>

| Group 2 Related background studies | |
| TP216 Quantity Surveying (Plumbing) | 2 |
| TP210 Contract and Building Law | 1 |
| TP241 Site Supervision and Organisation | |
| (Foremanship) | 2 |
| TP260 Plant Reading | 1 |
| TP262 Building Science IA and IB | 2 |

| Advanced or specialist units | |
| TP263 Estimating and Quantity Surveying (Plumbing) | 3 |
| TP261 Business Practice and Bookkeeping | 1 |
| TP238 Fluid Mechanics | 1 |

| Group 3 General building practices | |
| TP240 Construction Methods and Practices | |
| TP420 Plant and Equipment (Plumbing) | |

| Group 4 Specialist practices | |
| TP340 Pipeline Design A | 1 |
| TP341 Pipeline Design B | 1 |
| TP418 Drainage Design | 1 |

| Advanced or Specialist units | |
| TP220 Basic Measuring and Levelling (Plumbing) | 1 |
| TP480 Water Service Design | 1 |

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

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**81212E  Technician — Plant Services Detail Drafting**

**Entrance standard**
Pass 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>Year</th>
<th>Course</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>TP181 Pipe and Duct Fitting IT</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TP180 Plant Services Drafting IT</td>
<td>3</td>
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<tr>
<td></td>
<td>TP182 Building (Parameters) Appreciation IT</td>
<td>2</td>
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<tr>
<td></td>
<td>Approved elective</td>
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</tr>
<tr>
<td>2nd year</td>
<td>TP281 Pipe and Duct Fitting 2T</td>
<td>3</td>
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<tr>
<td></td>
<td>TP280 Plant Services Drafting 2T</td>
<td>4</td>
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<tr>
<td></td>
<td>TP282 Plant Equipment IT</td>
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<tr>
<td>3rd year</td>
<td>TP380 Plant Services Drafting 3T</td>
<td>4</td>
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<tr>
<td></td>
<td>TP382 Plant Equipment 2T</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Approved elective</td>
<td>2</td>
</tr>
</tbody>
</table>
Building subject details

Advanced Building Graphics (TB120)
Techniques of graphic communication applied to building

Air-conditioning IT (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 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. Dust design, external and internal heat loads. Moisture transfer. Air-cooling and spray equipment

Applied Geomechanics (TB304)

Balancing and Commissioning (TP452)
Principles and method, used in commissioning systems. Use of Instruments and report sheets. Basic computations. Practical balancing and commissioning in laboratory.

Basic Measuring and Levelling (plumbing) (TP320)
Efficient use of the dumpy level; automatic, and other measuring instruments. Measurement procedures and the application of theory in practical situations.

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 to be studied for two hours per week for two semesters.

Building Administration and Supervision (TB426)
Approached from the points of view of 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 (TB216)
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 (TB217)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted for examination at the end of the year. Some of the drawings will be solutions to given problems.

Building Construction 2A (TB322)

Building Construction 2B (TB323)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawing, will be solutions to given problems.

Building Construction 2C (TB427)
Allowable stress, Bending moment and shear force diagrams and calculations. Design of beams, columns, plate girders, roof trusses. Reinforced concrete design.

Building Construction 3A (TB412)

Building Construction 3B (TB413)
A folio of drawings covering eight selected topics, appropriate to the grade, to be submitted at the end of the year for examination. Drawings will be solutions to given problems.

Building Construction 3C (TB428)
Design principles applied to structures

Building Community Development (TB516)
Development of communities and the building site. The interactions of both social and economic terms.

Building Mathematics (T) (TB125)

Building Science (T) 1A and 1B (TB220)

Building Science 1A and 1B (building surveyors) (TB430)

Building Science 2A and 2B (TB320)
To extend work covered in Building Science 1 and to give students practical, basic working knowledge of the important areas of modern building services.

Building Surveying (T) Theory, Mathematics, Field (TB417)
Areas of plane figures, volumes of solids. Use of levelling instruments (dumpy, theodolite, etc.). Measuring distances, recording observations, datum points, bench marks, 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 — hinged and braced — 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 cut wall plates.
Module 8 (TB058), Timber villa construction — wall framing.
Module 9 (TB059), Timber villa construction — ceiling and gable roof framing.
Module 10 (TB060), Timber villa construction — simple hip roof framing.
Module 11 (TB061), Door and door frames (Domestic).
Module 12 (TB062), Window joinery — double hung sash with patented balances rectangular louver.
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 (TB071), Concrete formwork
Module A52 (TB072), Hip and valley roofing 1 (equal pitch).
Module A53B (TB073), Internal fixing.
Module A56B/C6 (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 (TB080), Large centres, shoring and trenches.
Module C52/C52 (TB081), Joinery 1 (doors, windows and louvres).
Module C33/D33 (TB082), Joinery 1 (curved work).
Module C57 (TB083), Stair building 2.
Module C58 (TB084), Stair building 3.
Communication (TH1116)
The examination of methods of collecting, organizing, evaluating and presenting factual information. Oral presentations, report writing, letters, memos and media analysis.

Communication and Technical Reports (TP210)
To develop skills in all aspects of communication and report writing applied to the building industry with particular reference to communication 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, presentation and presentation of reports, application of graphics, organisation requiring records, records filing, oral reports, conducting meetings.

Construction Methods and Practice (plumbing) (TP240)
To develop an understanding of structural systems and the relationship 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 (TP921)
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 (TP148)
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)
Slips, DC and AC supplies, single and three phase supplies, power factor, efficiency, power, motor starting, motors, safety and operating controls, wiring diagrams. Control terminology, two position control, floating control and modulating control, simple control systems, control diagrams.

English 1T (TH1140)
Development of ability to read with comprehension and appreciation, practice in oral and written English. Preparation of oral, concise notes and summaries.

English 2T (TH240)
Use of library material, preparation of reports. Debating, extension of practice in oral and written English.

English (Building Technician) (TH145)
Reading of newspapers, technical publications and selected books. Vocabulary and comprehension, Oral and written expression. Preparation of notes.

English Report Writing (Library and Thesis) (TB431)

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 contract 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, rise and fall considerations, progress payments.

Fluid Mechanics (TP236)
Fundamentals of fluid flow, statics, measurement of pressure and fluid flow. Equipment used in obtaining the necessary measurements for all calculations. Application of Boyle’s and Charles’ laws. Bernoulli’s equation and application coefficient of discharge. Principles of fans and pumps as applied to the science of fluid power.

Foundations 1A and 1B (TB408)

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. Particularly reference to safety aspects. 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. Office gas. Portable gas. Stove 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 interrelationships in management and the work force in the building industry.

Instrumentation (TP450)
Principles, construction and use of calibration of instruments used in the air-conditioning industry. These include the instruments used to measure temperatures, pressures, velocities, flow rates, speeds, line pressures and electrical quantities.

Mathematics 1T (TM130)
Two hours per week, daytime or evening, full year. Prerequisites. Year 10 mathematics or equivalent and adult entry. Assessment: Periodic tests and assignments and a final three hour examination in November. This course is devoted to teaching basic mathematics of algebra and trigonometry and assumes very limited prior knowledge of these areas. Topics covered are Fundamental Operation of Arithmetic and Algebra, Transpositions, Graphs, Trigonometry, Factorisation, solution, equations, 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 IT, adult entry, or qualifications deemed equivalent by the Mathematical Science Head of Department. Assessment: Class work (thirty per cent) and one final examination (sixty per cent). An extension of Mathematics IT. The topics include: review of basic algebra, advanced units in algebra, graphs of special functions, analysis of experimental data, advanced units in trigonometry, analytic 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: see supplied notes.

Mathematics 1A and 1B (1H) (TM120)

Five hours per week, daytime for one semester or two hours per week, evening for the second semester. Assessment: consists of class work (thirty per cent) and a final examination (seventy per cent).

This unit deals with the following topics of mathematics: equations and formulae, relations and functions, trigonometrical functions and their introduction to calculus. It is designed as a preparatory mathematics course leading to the mathematics 2H unit.

References:

Mathematics 2H (TM230)

Full-time. Five hours per week, daytime for one semester. Part-time: Two hours per week during the first semester. Pre-requisites: TM120. Mathematics 2H Assessment consists of one internal examination (twenty per cent) and one final examination (eighty per cent).

The subject consists of the following topics for which assignments must be completed: Trigonometry, differentiation from first principles; integration; trigonometric equations; vectors and matrices; complex numbers; small increments and approximations; calculus and rates; mean and root mean square; work, volume of revolution; differential equations; optimization 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. 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.

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 design and installation of pipe and duct systems. Basic elementary use of these tools and materials.

Pipe and Duct Fitting 2T (TP281)

A practical exercise in the fabrication and installation of different components of a ducted heating system.

Pipeline Design 'A' Sanitary Plumbing 1 unit (TP340)

To develop understanding 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 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 IT (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, dual duct, and multi-zone air-conditioning systems, and associated equipment such as fans, hosing, coil, ductwork, mixing boxes, registers, controls and piping.

Plant Services Drafting 1T and 2T units (TP180, TP280)

Deals with detailing of elements of systems and layouts of relatively simple systems associated with 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:

Orientations: safety tools, materials and gauges, building terms.

Modules 1 to 12: related instruction, trade drawing, geometry, development drawings 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, and 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 cisterns, country water supply.


Phase 3:

Modules A56 — A63

Trade Theory — Sanitary Plumbing: multiple fixtures up to five storeys, sewage pipe systems, fixtures for industrial and trade purposes, pipe-sizing and estimating.
Drainage: design and installation of polluted areas. Septic tanks. Water supply, residential, industrial and special services. Pressure-fed systems. Filtration and treatment of water, pumps and injectors, 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 051 — 053

Heating: heating equipment, types, piping systems, water heating. Ventilating, air-conditioning and refrigerating: types of systems, equipment, temperatures.

Water supply: planning and design, source of supply, pressure, special services.

Mild steel pipe, copper tube and plastics: bends and offsets, straight, angle and branch joints.

Mild steel sections: flat angle and round applications and welding.

Gasfitting — natural, LP blended: planning, pressures, principles and installation, conversion, safety.

Welding and cutting: oxy-acetylene, electric andargon — 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 pipe, valves, sheetmetal.

TP902 Measuring and levelling, drain installation, trench-shoring.

TP903 Installation of sanitary fixtures and water supply.

TP904 Installation and commissioning of gas appliances and water supply.

TP905 Fixing of roofing materials: flashings, downpipes and rain water products.

TP906 Installation of boiler, small bore heating, room air conditioners, ducting and pipe work and water supply.

TP907, TP908, TP909, TP910, TP911 Specialist areas under development are roof work, sanitary, gas, mechanical, welding.

Practical Inspection (building) (TB436)

This module is 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 module aims to 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 (TB601)

Administration and law. Town planning. Building regulations.

Quantity Surveying 1 and Quantity Surveying (HB) (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 excavation, concrete, bricklayer, carpenter, joiner and sanitary metalwork items.

Refrigeration 1T (TP349)

The theory of heating and cooling of liquids and vapours. The study of the vapour compression cycle using ammonia, K12 and K22 refrigerants. Description of refrigeration equipment anti different types of refrigerant. Storing or refrigeration equipment.

Refrigeration 2T (TP449)

The study of compressors, volumetric efficiency, compressor losses, multi-stage compressors, flooded systems, pressure control, matching component with a VC system; absorption refrigeration and heat transfer.

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 of each type of service.

Reticulated Systems 2T (TP458)

Covers control components, special 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 scaffold to erect, alter or dismantle heavy-duty suspended scaffolding and heavy-duty swing-stage scaffolding.

Rigger 4 (TB804)

Instruction sufficient to enable the scaffold to erect, alter or dismantle light-duty swing-stage scaffolding and building's chair.

Role and Function of a Clerk of Works (TB320)

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 scaffold to erect, alter or dismantle pole scaffolding, both timber and frame scaffolding. Class 2: instruction sufficient to enable the scaffold to erect, alter or dismantle cantilever and bracket scaffolding.

Scaffolding Inspection A and B (TB345, TB439)

Covers interpretation of scaffolding regulations, defines responsibilities of all persons involved in the provision, erection and use of scaffolding including steel tube, frames, suspended cantilever bracket, ladders and miscellaneous equipment.

Science 1T (TM170)

Two hours per week, day or evening over two semesters. Prerequisites: Year 10 science or equivalent and equal 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 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 1T (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

Science 2T (TM270)

Two hours per week evening over two semesters. Prerequisites: Science 2T, adult entry, or qualifications deemed equivalent by the Mathematics and Science, Head of Department. Assessment: Class work (40%) and one final examination (60%). An extension of Science 1T, the topics include: electricity and magnetism, advanced units in electric circuits, fluid states, fluid dynamics, optics and wave motion, thermodynamics, mechanical dynamics. Students enrolled in TM270 normally study mathematics (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

References

Supplied notes
Services in Buildings (TB241)
A study of services to, 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.

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 he studied in breadth rather than in depth. It is intended to be an introduction to specifications and to give the student an awareness of the importance of specifications. It is also proposed that Specifications 1 be a prerequisite to Specifications 2.

Specifications, Drawing Interpretations and Co-ordination (TB419)
Study of the inter-relationship 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 inspection procedure.

Structural Design Drafting 1A and 1B (TB307)
Usual prerequisites for this subject are passes in Structural Drafting and Structural Practices. The subject is concerned with design drafting practice in a variety of realistic situations.

Structural Design Drafting 2A and 2B (TB407)
Further work in extension of Structural Design Drafting 1A and 1B. Structural Design and Drafting 2C and 2D (TB507). Further work in extension of Structural Design Drafting 1A, 1B, and 1A, 2B.

Structural Drafting 1A and 1B (TB195)
Usual prerequisite for this subject is a pass in Technical Drawing A Course includes practical drafting and lectures on use of steel sections, splicing, connections, standard drawing 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 building, composite type building, 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 3A and 3B (TB397)
Further extension of Structural Mechanics 1A and 1B, 2A and 2B.

Structural Mechanics 2A and 2B (TB297)
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 (TB144, TB250)
Details of this subject have not as yet been determined.

Technical Reports (building) (TB222)
Summaries, comprehension, records used industry, types of reports (written and oral) Logical argument and the use of the spoken word. Use of library material. Uses of visual aids in reports.

Water Service Design (TB480)
To develop skill in the design and drafting of water supply reticulation services, flushing services and fire services.
Business Studies Division

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PC. Qua., BCom, DipEd, AASA(Prov)

Business Studies Department

Head
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Principal
J. Berry, BSc, DipEd

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 clay 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 courses 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
- Timbers
- 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 the 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 Curriculum Board of the State Council for Technical Education. Application forms are available from and must be submitted to the head of the 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 not be given for subjects which are below Australian university entrance standard, i.e. the equivalent of Higher School Certificate.
(2) Credit will be given only if there is a substantial overlap of topics, except where:
   (a) A person has passed a general education subject and seeks exemption in an unrelated general education subject: e.g. HSC Politics would give an exemption in Australian Social Structures.
   (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
If the alternative is not part of a well-known course such as HSC it may be necessary to provide details on the:
   (a) subject matter covered by the syllabus
   (b) length of the course
   (c) assessment methods used.

Sighting of original documents
Photocopied documents supporting applications must be marked ‘original sighted’ by an officer of the college, therefore it is suggested that applications be submitted in person to Student 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 must be recommended by the heads of Humanities and Mathematics and Science respectively. After approval, letters of notification are prepared and rechecked, therefore students should expect this process to take approximately two months.

Further information
Additional details about these certificate courses are available from:
Mr R.W. Conn
Head of the Business Studies Division,
Telephone 819 8165

Changes in course structures
The course structures listed below are those applicable in 1981. These may be amended from time to time. Students must get a current course structure when they enrol. This is because students must complete their certificate by following the course structure current in the year of their initial 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 an out of date course structure.

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 previous page.

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.
82330G 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 or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH1126 Middle-level English 1A
TH1127 Middle-level English 1B
TS01 Accounting 1 (Bookkeeping to trial balance)
TS102 Accounting 2 (Preparation of financial reports)
TS103 Accounting 3 (Accounting systems)
TS204 Accounting 4 (Partnership and company accounting)
TS205 Accounting 5 (Financial management)
TS120 Data Processing 1 (two units)

Plus three of the following units
TS206 Accounting 6 (Costing elements)
TS207 Accounting 7 (Costing systems)
TS208 Accounting 8 (Internal control and auditing)
TS209 Accounting 9 (Budgeting procedures)
TS210 Accounting 10 (Accounting theory)
TS211 Accounting 11 (Introduction to taxation)
TS212 Accounting 12 (Income tax law and practice)
TS213 Accounting 13 (Government Finance and Accounting Part 1)
TS214 Accounting 14 (Government Finance and Accounting Part 2)

Plus four of the following units
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B
TS228 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

Four elective units
Any of the above units not already selected.

Any other Certificate of Business Studies units except some units offered by other colleges but not offered by Swinburne e.g. Small Business Procedure, 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.

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-keeping typists rather than secretaries.

The course provides an excellent backgound in accounting while a high degree of typing 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 or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course structure
Compulsory units
TH1126 Middle-level English 1A
TH1127 Middle-level English 1B
TS01 Accounting 1 (Bookkeeping to trial balance)
TS102 Accounting 2 (Preparation of financial reports)
TS103 Accounting 3 (Accounting systems)
TS204 Accounting 4 (Partnership and company accounting)
TS205 Accounting 5 (Financial management)
TS120 Advanced Business Typewriting 1A
TS121 Advanced Business Typewriting 1B
TS280 Advanced Business Typewriting 2A
TS281 Advanced Business Typewriting 2B

Plus four units from the following
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS238 Introduction to Economics 1A
TS239 Introduction to Economics 1B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B
TS129 Industry and Society
TM110 Business Mathematics 1A
TM111 Business Mathematics 1B

Five elective units
Any other Certificate of Business Studies units not already selected, including TS228 Secretarial Projects (2 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 two year full-time basis only.
82338G  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 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 (Book-keeping to trial balance)
TS102  Accounting 2 (Preparation of financial reports)
TS224  Middle-management Practices A (Planning)
TS225  Middle-management Practices B (Organisation)
TS324  Middle-management Practices C (Staffing)
TS325  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)
TS160  Salesmanship 1
TS161  Salesmanship 2
TS170  Supply Procedures 1A
TS171  Supply Procedures 1B
TS120  Data Processing 1 (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.

82332G  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 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
TS130  Personnel 1A
TS131  Personnel 1B
TS230  Personnel 2A
TS232  Personnel 2C
TS233  Personnel 2D
TS240  Industrial Relations A
TS241  Industrial Relations B
TS231  Industrial Relations C
TS129  Introduction to Business/Service Organisations
TS224  Middle-management Practices B (Organisation)
TS215  Behavioural Studies 1A
TS216  Behavioural Studies 1B

Plus four of the following units:
TS244  Introduction to Law 1B
TS120  Industry and Society
TS224  Middle-management Practices A (Planning)
TS325  Middle-management Practice 5 D (Leadership)
TS120  Data Processing 1 (2 units)

Two elective units
Any of the above units not already selected or any of the following:
TS243  Introduction to Law 1A
TS230  Introduction to Economics 1A
TS239  Introduction to Economics 1B
TF164  Work Method Improvement 1A
TF185  Work Method Improvement 1B
TS101  Accounting 1 (Book-keeping to trial balance)
TS102  Accounting 2 (Preparation of financial reports)

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 studies basis or the first half of the course can be completed in one year on a full-time basis with the second half on a part-time evening basis.

Membership of associations
Students who are undertaking this course are eligible to apply for student membership of the Institute of Personnel Management of Australia. Students who complete the course successfully and are employed in the personnel area may apply for full membership.
82334G 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 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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<tr>
<th>Compulsory units</th>
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<tbody>
<tr>
<td>TH126 Middle-level English 1A</td>
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<tr>
<td>TH127 Middle-level English 1B</td>
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<tr>
<td>TM110 Business Mathematics 1A</td>
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<tr>
<td>TM111 Business Mathematics 1B</td>
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<tr>
<td>TS128 Industry and Society</td>
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<tr>
<td>TS129 Introduction to Business/Service Organisations</td>
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<tr>
<td>TS135 Behavioural Studies 1A</td>
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<tr>
<td>TS140 Production Techniques 1A</td>
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<td>TS240 Production Techniques 1B</td>
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<td>TS241 Production Techniques LA</td>
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<td>TS245 Production Techniques 2B</td>
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<td>TS246 Production Techniques 2B</td>
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<tr>
<td>TS247 Supply Procedures 1A</td>
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<td>TS248 Supply Procedures 1B</td>
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<td>TS249 Supply Procedures LA</td>
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<td>TS250 Supply Procedures 2B</td>
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<tr>
<td>TS251 Supply Procedures 2B</td>
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<td>TS252 Supply Procedures 2B</td>
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</tbody>
</table>

Four elective units
Any other Certificate of Business Studies unit.

Note
Twenty units are required for the certificate. The groupings shown above must be observed.

Duration of course
The 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 or an approved equivalent course or are considered to be sufficiently mature and experienced enough to undertake the course successfully.

Course detail

<table>
<thead>
<tr>
<th>Compulsory units</th>
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<tbody>
<tr>
<td>TH126 Middle-level English 1A</td>
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<tr>
<td>TH127 Middle-level English 1B</td>
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<tr>
<td>TM110 Business Mathematics 1A</td>
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<tr>
<td>TM111 Business Mathematics 1B</td>
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<tr>
<td>TS238 Introduction to Economics 1A</td>
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<td>TS239 Introduction to Economics 1B</td>
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<td>TS243 Introduction to Law 1A</td>
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<td>TS244 Introduction to Law 1B</td>
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<td>TS245 Behavioural Studies 1A</td>
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<td>TS246 Behavioural Studies 1B</td>
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<tr>
<td>TS247 Salesmanship 1 (Previously Sales 1A)</td>
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<td>TS248 Salesmanship 2 (Previously Sales 1B)</td>
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<tr>
<td>TS249 Sales Management 1 (Previously Sales 2A)</td>
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<tr>
<td>TS250 Sales Management 2 (Previously Sales 2B)</td>
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<tr>
<td>TS251 Marketing Principles 1 (Previously Marketing Principles and Practice A)</td>
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<tr>
<td>TS252 Marketing Principles 2 (Previously Marketing Principles and Practice B)</td>
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<tr>
<td>TS101 Accounting 1 (Book-keeping to trial balance)</td>
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<tr>
<td>TS102 Accounting 2 (Preparation of financial reports)</td>
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</table>

Two elective units
Any other Certificate of Business Studies unit.

Note
Twenty units are required for the certificate. The groupings shown above must be observed. TS160/T5161 is a prerequisite for TS260/T5261 TS260/T5261 is a prerequisite for TS227/T5228

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 required to complete four additional subjects to be academically qualified for admission to the Australian Marketing Institute at Associate Diploma level.

Students completing the course are academically qualified for admission as members of the Australian and New Zealand Marketing Association and as Associate members of the Australian 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 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 if they have completed satisfactorily an approved course at Leaving level 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
- TS200 Advanced Business Typewriting 2A
- TS201 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)

Plus four units from the following
- TS215 Behavioural Studies 1A
- TS216 Behavioural Studies 1B
- TS236 Introduction to Economics 1A
- TS239 Introduction to Economics 1B
- TS243 Introduction to Law 1A
- TS244 Introduction to Law 1B
- TS128 Industry and Society
- TS129 Introduction to Business/Service Organisations
- TM110 Business Mathematics 1A
- TM111 Business Mathematics 1B

Four elective units
Any other Certificate of Business Studies units including any of the above not already selected

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 if they have completed satisfactorily an approved course at Leaving level 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
- TS70 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 Data Processing 1 (2 units)

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 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.
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 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
TF184 Work Methods Improvement 1A
TF185 Work Methods Improvement 1B
TF162 Work Measurement 1A
TF163 Work Measurement 1B
TF284 Work Methods Improvement 2A
TF285 Work Methods Improvement 2B
TF286 Work Methods Improvement 2C
TF287 Work Methods Improvement 2D
TF288 Work Measurement 2A
TF289 Work Measurement 2B
TF280 Work Measurement 3 (2 units)

Plus three units from the following
TS128 Industry and Society
TS215 Behavioural Studies 1A
TS216 Behavioural Studies 1B
TS120 Data Processing 1 (2 units)
TS224 Middle-management Practices A (Planning)
TS225 Middle-management Practices B (Organisation)
TS324 Middle-management Practices C (Staffing)
TS325 Middle-management Practices D (Leadership)
TS236 Introductory Economics 1A
TS239 Introduction to Economics 1B
TS243 Introduction to Law 1A
TS244 Introduction to Law 1B

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 1 (TS101) (Previously Accounting 1A) (1 unit)
Book-keeping to trial balance — forms of business ownership and types of business activities. Basic outline of accounting conventions, requirements for business records and basic book-keeping documents to maintain records. Complete manual book-keeping process for sole trader service and trading businesses (using paper Inventory method only), including bank reconciliation statements, imprest petty cash system, and subsidiary ledgers for debtors and creditors.

Accounting 2 (TS102) (Preparation of financial reports) (1 unit)
Summary of entire book-keeping process from source documents, including balance day adjustments and ledger recording of balance day adjustments, closing entries and reversing entries. Classified revenue statement and balance sheet from trial balance with adjustments for a sole proprietor or both a service and trading organisation. Final accounting reports for a sole proprietor, using a single entry system of book-keeping, both a trading and service organisation. Preparation of suitably classified manufacturing statements, and incorporating the cost of production in the revenue statement for a manufacturing organisation. Revenue statements showing department profit and loss and final profit and loss for a sole proprietor. The recording involved in the setting up and maintenance of records 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 reports for clubs and societies.

Accounting 3 (TS103) (Previously Accounting 1B) (1 unit)
Relevance of and necessity for flow charting and coding of data within accounting systems. Essential features of equipment used to maintain systems using either manual, semi-automatic or electronic equipment. Essential features of 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.

Accounting 4 (TS204) (Previously Accounting 2A) (1 unit)
Partnership and Company Accounting. Essential 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 and loss appropriation statement and a balance sheet of a partnership or company. Financial statements: Fund statements for sole proprietorship and company. Analysis of the financial structure of a business using a funds statement. Accounting report classification for analysis and interpretation. Accounting ratios, interrelationship and limitations, and reports on profitability and financial stability. Nature, purpose and preparation of financial statements and cash performance reports. Sources of funds to finance cash deficits and investments for excess cash. Sources of finance available to a sole trader and partnership — the interest cost involved.

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, department overhead budgets and pre-determined overhead rates. Accounting for overhead costs. Overviews of complete job cost systems.

Accounting 7 (TS207) (Previously Accounting 2D) (1 unit)

Accounting 8 (TS208) (Previously Accounting LE and 2F) (1 unit)
Internal control and auditing. Objectives of external audit and responsibilities of auditors. Management’s responsibility for accounting controls to government and other parties. Internal control systems for cash receipts and payments, deposits, stock, sales credits, purchases, payroll. Improving internal control. Data processing systems using manual mechanical and EDP methods. Coordination of external and internal audit. Evaluation of internal control, audit programs, balance sheet verification and the audit report. Special internal control systems for trusts, agents, solicitors, contractors, traders, and the like. Additional documentation (e.g. business letters, memos, schedules, schedules of business documents, including payroll records and ledgers). Internal control over various aspects, e.g. business letters, memos, statements, trade documents, etc., normal at a speed of 35 w.p.m. for at least 10 minutes on a specific task.

Advanced Business Typewriting 1A (TS180) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, typewritten, etc.) and material involving a range of requirements (e.g. carbon copies, retention etc.) to type accurate copies of various business communications (e.g. business letters, memos, business documents, including payroll records and ledgers). By spirit masters and offset paper masters, at normal syllabic intensity (135-144) at an average speed of 40 w.p.m. for at least 10 minutes on a specific task.

Advanced Business Typewriting 1B (TS181) (1 unit)
To enable the student, given material in various forms (e.g. manuscript, typewritten, etc.) and material involving a range of requirements (e.g. carbon copies, retention, etc.) to type accurate copies of various business communications (e.g. business letters, memos, business documents, including payroll records and ledgers). At normal syllabic intensity (135-144) at an average speed of 45 w.p.m. for at least 10 minutes on a specific task. To plan and make decisions relating to the most difficult tasks likely to be required in a business organisation.

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, memos, business documents, including payroll records and ledgers). At an average speed of 45 w.p.m. or at least 10 minutes on a specific task.

Accounting 13 (TS213) Government Finance and Accounting Part 1 (1 unit)
This unit is the first of two government accounting units which covers the history of general revenue collection. Commonwealth/State financial relations, the preparation, presentation and supporting documentation for the Government Master Budget. role and powers of the Auditor-General, the composition, powers, duties and procedures of the Public Accounts Committee and Executive Council, and financial control through accounting techniques, Audit Acts and General regulations.

Accounting 14 (TS214) Government Finance and Accounting Part 2 (1 unit)
Accounting for trading organisations and non-trading service organisations. The fund system of accounting, balance sheet, budgetary control 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.

Swinburne Technical College
Data Processing 1 (TS120) (2 units)
Modern data processing techniques for the provision of information to management. Problems that exist in the operations of business systems, and the ways in which data processing equipment operates. Data processing systems using manual, semi-automated and fully automated procedures. Program writing and methods to ensure that they operate correctly. 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.

Data Processing 2 (TS230) (2 units)
Preparation of modern data processing systems, analysis of systems, and implementation of new systems.

Data Processing 3 (TS221) (2 units)
Programming, using COBOL language.

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 — supervision, managers, etc. Employee and union-oriented rules (award, non-award: written, unwritten). Appreciation of written rules governing employee-management relationships at work. Function of, and knowledge of, main management and union rules.

Industrial Relations B (TS241) (1 unit)

Industrial Relations C (Personnel 2B) (TS231) (1 unit)
The structure and function of the Australian Trade Union Movement. Employer organisations and the Conciliation and Arbitration Commission, the functions of government departments related to industrial relations, study experiments to improve the industrial environment.

Industrial Relations 1A and 1B (TS452) (1 unit)
A study of inter-relationship of management and the work force in the building industry.

Industry and Society (TS120) (1 unit)
The work ethic and the nature of work, the social responsibility for employers, growth of industrial enterprises and economic growth, primary, secondary and tertiary industry, consumerism, pricing, trade unions, employer organisations, population growth, the environment, the influence of government on industry and society.

Introduction to Business Service Organisations (TS29) (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 of managers, policy decision-making and documentation, general management tasks, basic business functions — financing, purchasing, staffing, production, sales and marketing; operating techniques and controls of above.

Introduction to Economics 1A (TS238) (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 (TS224) (1 unit)
Laws of contract, 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 Good's Act 1958 and Hire Purchase Act 1959. Cheques, their legal status and the effects of different types of crossings.

Middle-management Practice A (Planning) (TS224) (1 unit)
Management as an integrated process, planning — nature of the planning process; activities, forecasting objectives, 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, communication, manpower requirements planning, job documentation, corporate organisation structure and relationship.

Middle-management Practice C (Staffing) (TS224) (1 unit)
This subject examines the main elements involved in the assessment of present and future manpower needs through: recruitment, selection, training and development, staff appraisal, retirement, retraining, separations.

Middle-management Practice D (Leadership) (TS235) (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 communications 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 philosophy and organisation; the marketing environment; market 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 business communications 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 organisation of work; supervision of office staff; use of specific clerical aids and office machines; development of communication procedures.
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 2C (TS232) (1 unit)
Manpower planning and development, main variable for personnel inventory, future staffing requirements, training programs, performance appraisal.

Personnel 2D (TS233) (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 quantitive and graphical form: enabling the conversion of market requirements into saleable inventory.

Production Techniques 1B (TS151) (1 unit)
Advancement 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)
Examines 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 buyer psychology; selling and merchandising techniques; time usage and sales planning.

Salesmanship 2 (TS161) (1 unit)
Salesmanship: how to plan and conduct a sales presentation; opening the sale; use of sales aids; selling the benefits; overcoming objections; closing the sale and after sales service.

Secretarial Practice A and B (TS165) and (TS166)
Understanding role of secretary as an assistant to 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)
Basic principles in performing supply and purchasing functions, procedures for operation and control of purchasing function.

Supply Procedures 1B (TS171) (1 unit)
Continuation of Supply 1A.

Supply Procedures 2A (TS270) (1 unit)
Principles and practice to perform supply and purchasing function, purchasing overseas.

Supply Procedures 2B (TS271) (1 unit)
Complete procedures for inventory control, functions related to materials management.

Work Methods Improvement 1A, 1B (TF184, TF185) (1 unit each)

Work Methods Improvement 2A, 2B (TF284, TF285) (1 unit each)

Work Methods Improvements 2C, 2D (TF286, TF287) (1 unit each)

Work Measurement 1A, 1B (TF182, TF183) (1 unit each)

Work Measurement 2A, 2B (TF282, TF283) (1 unit each)
Frequency studies. Interference to production. General data system. Statistical work sampling. Non-repetitive work measurement. Master clerical data. EPS resources contributing to capacity. Filing systems.

Work Measurement 3 (TF382) (2 units)
Wage payment plans. Labour budgets and controls. Complete techniques project.
Kew High — Evening School Department

Head
Mr J. Berry, BSc, DipEd

Educational evening 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
- English Literature
- French
- Applied Mathematics
- Pure Mathematics
- General Mathematics
- Biology
- Chemistry
- Physics
- Human Development and Society

HSC — Group 2
- English A
- Small Business Management

Pre-HSC Workshops and Year 11
- English
- Business Studies
- Mathematics
- Basic
- English
- Mathematics

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 ................................................. TC36
--- Electrical and electronics courses ................ TC37
--- Machines and materials courses .................... TC41
--- Special courses ...................................... TC50
--- Subject details ....................................... TC57
Engineering Division

Head
M.M. Katz, BEng(Mech), BEd, DipMechEng, CertElecEng
TTIC, ARMIT, MIEAust, MAIRAH

Electrical and Electronics Department

Head
F.L. Smyth, TTrIC, TechCert(Electronics), SEC A Grade Licence

Secretary
Maureen Davis

Academic staff
J.L. Alarcon, BE(ElecComm), BE(Electronics), DipEd
GradE(Aust
M.M. Blonder, DipEng(Electronics), DipEd
A. Bolton, BAppSci, GradIREE, TechCert(Telecom)
A.O. Edgell, REdg, MIPPlantE, LiProdE, Ced
R.M. Edwards, TTrIC, SEC A Grade Licence
TechCert(Electronics)
B.T. Flanagan, TTrIC, TechCert(Electronics)
F. Gaunt, TTrIC, SEC A Grade Licence
TechCert(Electronics)
W.J. Gear, BE(Electrical)
P. Hince, SEC A Grade Licence
H. Hoenen, TTrIC, HigherTechCert(Power), DipIT
TechCert(Electronics), SEC A Grade Licence
F. Hutchison, TTrIC, TechCert(Electronics), SEC A Grade Licence
B. Johnston, SEC A Grade Licence
D. Kottek, BE(Elec), DipEd, GradE(Aust, MACS
D.V. McMahon, TTrIC, SEC A Grade Licence
J. Phillips, TechCert(Electronics), SEC A Grade Licence
W.H. Pratt, TTrIC, SEC A Grade Licence
TechCert(Electronics)
G.H. Sutherland, DipEE
R.G. Warren, TTrIC, TechCert(Electronics)

Machines and Materials Department

Head
G.N. Williams, TTrIC

Academic Staff
D. Amato, BEng(Mech), DipEd, GradE(Aust
R.W. Barker, TechCert, TTrIC
K. Battersby, TTrIC
P. Bentley, DipProdEng, DipEd
K.J. Carmody, DipMechE, DipEd, MIEAust
M. Carvill, TechCert(MechDesign), TTrIC
L. Dodos
G. Dzioba, TTrIC
A.O. Edgell, REdg, MIPPLANTE, LiPRODE, Ced
J.M. Franklin, TTrIC
D.J. Gaylard, TTrIC
E.F. Hayes, MechEngCert, TTrIC
W. Houliston, TTrIC
L.J. McLaughlan, TechCert, TTrIC
F.S. McLucas, TTrIC
J. Myles, TechCert, DipIT, TTrIC
E.G. Oliver, TTrIC
K. O’Neil, DipIT, TTrIC
H. Ramaekers
F. Sanstrom, TTrIC
S.D. Scott-Branagan, TTrIC
R.S. Somerville, TTrIC
A.J. Stapley, PhD, DipEd
P. Tomat, Cert(Toolmaking), CertPressToolmaking, DipIT, TTrIC
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 Electrical Commission of Victoria and the Education Department of Victoria.

Minimum entry standards are laid down by the Industrial Training Commission of Victoria and are presently, year 9 with passes in relevant subjects or the equivalent.

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.

Post-trade course
83571E Electrical Contracting, Estimating and Supervision

Electrical technician courses:
83510E Technician — Electrical (Electronics)
83511E Technician — Electrical (Design)
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, as a general rule, 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 at technician level.

An electrical tradesman can qualify for an electrical technician certificate by completing the outstanding subjects as listed under the electrical technician courses.

Certificate of Technology courses
Electronics — This course is designed for personnel working in the field of telecommunications. Enquiries are invited for admission to the course.

Electrical, and electrical drafting — these courses provide adequate training for persons working as aides to professional engineers whose interests are in the field of electrical power and its distribution.

The following Certificate of Technology courses offered provide the necessary academic training for the positions of technical officer, engineering assistant or engineering technician within the public service and private industry.

The training given during the course enables the student to supply technical support to the professional engineer, either with or without direct supervision and be able to relate to the trades personnel in the practical areas.

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/electronics industry.

The courses offered are:
83520G Certificate of Technology (Electrical) — Power
83530G Certificate of Technology (Electronics), full-time
83531G Certificate of Technology (Electronics), part-time
83550G Certificate of Technology (Electrical) — Design Drafting

Each of the above courses is offered on either a full- or part-time basis.

To gain the certificate of technology qualification it is necessary for students to complete all subjects of the course and to have a minimum of two years of approved full-time work experience.

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.

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.

Mature-age students without the above qualifications are invited to discuss this with the head of the department.

Exemptions
Should be referred to the head of the department with suitable written evidence to support the claim.

Enquiries
Mr F.L. Smyth, 819 8993.
Apprenticeship course

83501D  Apprenticeship: Electrical Mechanics

Entrance standard
Satisfactory completion of year 9 in a technical school, or an equivalent course, with pass in relevant subjects.

Course structure

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<th>Hours</th>
<th>Week</th>
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<tbody>
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<td>1st year</td>
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<tr>
<td>TE001</td>
<td>Module 1 Electrical Wiring</td>
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<td>TE002</td>
<td>Module 2 Electrical Wiring</td>
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<td>Module 5 Electrical Wiring</td>
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<td>Module 7 Electrical Wiring</td>
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<td>TE008</td>
<td>Module 8 Electrical Fitting</td>
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<td>2nd year</td>
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<td>TE009</td>
<td>Module 9 Electrical Wiring</td>
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<td>3rd year</td>
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<td>TE017</td>
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<td>TE024</td>
<td>Module C58 Electrical Wiring</td>
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External examinations (Education Department)

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<th>Equiv.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE301 Elect. Wiring Theory 3</td>
<td>to C54</td>
<td>'B' Cr. Th.</td>
</tr>
<tr>
<td>TE302 Elect. Wiring Pract. 2 and 3</td>
<td>to C54</td>
<td>'B' Gr. Pr.</td>
</tr>
<tr>
<td>TE401 Elect. Wiring Theory 4</td>
<td>to C58</td>
<td>'A' Gr. Th.</td>
</tr>
<tr>
<td>TE402 Elect. Wiring Pract. 4</td>
<td>to C58</td>
<td>'A' Gr. Pr.</td>
</tr>
</tbody>
</table>

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 'A' Grade Electrical Mechanic or an electrical apprentice.

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

<table>
<thead>
<tr>
<th>Hours</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE501 Electrical Contracting and Estimating</td>
<td>2</td>
</tr>
<tr>
<td>TE506 Supervision (electrical)</td>
<td>2</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, Science and Technical Drawing at Leaving technical level. Minimum entry is completion of relevant year 10 subjects.

#### 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 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE170 Electronic Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd and 4th year</strong></td>
<td></td>
</tr>
<tr>
<td>TE326 Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td>TE412 Industrial Electronics 2T</td>
<td>4</td>
</tr>
<tr>
<td>TE413 Industrial Electronics 3T (General)</td>
<td>4</td>
</tr>
<tr>
<td>TE326 Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td>TE414 Industrial Electronics 2T</td>
<td>4</td>
</tr>
<tr>
<td>TE415 Industrial Electronics 3T (Digital Control)</td>
<td>4</td>
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</table>

#### 83511E Technician — Electrical (Drafting)

<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 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE170 Electronic Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE227 Electrical Drafting 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM230 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td><strong>3rd and 4th year</strong></td>
<td></td>
</tr>
<tr>
<td>TE324 Electrical Apparatus and Circuits</td>
<td>2</td>
</tr>
<tr>
<td>TE325 Electrical Drafting 2T</td>
<td>2</td>
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<tr>
<td>TE326 Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td>TE425 Electrical Drafting 3T</td>
<td>4</td>
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</tbody>
</table>

#### 83512E Technician — Electrical (Power)

<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 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE227 Electrical Drafting 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE228 Electrical Technology</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>TH240 English 2T</td>
<td>2</td>
</tr>
</tbody>
</table>

#### 83513E Technician — Electrical (Motor Control)

<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 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TE170 Electronic Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TM220 Mathematics 2T</td>
<td>2</td>
</tr>
<tr>
<td>TM270 Science 2T</td>
<td>2</td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
</tr>
<tr>
<td>TE150 Electric Motor Control 1T</td>
<td>4</td>
</tr>
<tr>
<td><strong>3rd and 4th year</strong></td>
<td></td>
</tr>
<tr>
<td>TE326 Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td>TE250 Electric Motor Control 2T</td>
<td>4</td>
</tr>
</tbody>
</table>

#### 83570E Industrial Electronics Certificate course

**Entrance standard**
Satisfactory completion of two years of an electrical technical course or three years of an electrical trade course or an acceptable standard in any other approved course of study.

<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>TE326 Industrial Electronics 1T</td>
<td>4</td>
</tr>
<tr>
<td><strong>2nd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE412 Industrial Electronics 2T (General)</td>
<td>4</td>
</tr>
<tr>
<td>TE414 Industrial Electronics 2T (Computing and Logic Circuits)</td>
<td>4</td>
</tr>
<tr>
<td><strong>3rd year</strong></td>
<td></td>
</tr>
<tr>
<td>TE413 Industrial Electronics 3T (General)</td>
<td>4</td>
</tr>
<tr>
<td>TE415 Industrial Electronics 3T (Digital Control)</td>
<td>4</td>
</tr>
</tbody>
</table>

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Swinburne Technical College
Certificate of Technology courses

83520G Certificate of Technology (Electrical) — Power
83550G Certificate of Technology (Electrical) — Design Drafting

Course structure
To complete the academic portions of the above it is necessary to complete the core subjects listed and a minimum of eleven units of the electives listed, of which at least four units each, must be at Stage 3 and Stage 4.

Core subjects (nineteen units)

| Stage |  
|-------|---|
| 1     | TE110  
|       | Applied Electricity 1H  
|       | TE123  
|       | Electronics 1H  
|       | TE333  
|       | Electrical Drafting 1H  
| or    | TH116  
|       | Communication  
|       | TM123  
|       | Mathematics 1E  
| 2     | TE210  
|       | Applied Electricity  
|       | TE223  
|       | Electronics 2H (Power)  
| or    | TE240  
|       | Electronics 2H (Power)  
|       | TM223  
|       | Mathematics 2E  
| 3     | TE310  
|       | Electrical Machines 1H  

Elective subjects (all two units except those marked * which are one unit)

| Stage |  
|-------|---|
| 1     | TE125  
|       | Wiring and Assembly Methods 1H  
|       | TE335  
|       | Computer Studies 1H  
|       | TM460  
|       | Physics 1H  
|       | TF121  
|       | Applied Mechanics 1A & 1B  
|       | TF327  
|       | Applied Heat 1H  
| or    | TE140  
|       | Electrical Drafting Principles 1H  
|       | TH180  
|       | Social Science 1H  
| 2     | TE233  
|       | Electrical Drafting 2H  
| or    | TE240  
|       | Electrical Drafting Principles 2H  
|       | TF236  
|       | Digital Electron-cdH  
|       | TF221  
|       | Applied Mechanics 2A and 2B  
| 3     | TE340  
|       | Electronics 3H (Power)  
|       | TE324  
|       | Electronics 3H  
|       | TE360  
|       | Electrical Design 1H  
|       | TE320  
|       | Pulse and Digital Electronics 1H  
|       | TE338  
|       | Microprocessor Fundamentals  
|       | TE419  
|       | Electrical Measurements  
|       | TE436  
|       | Digital Electron-cdH  
|       | TM220  
|       | Mathematics 3H  
| 4     | TE410  
|       | Power Systems (Applied Electricity 4H)  
|       | TE460  
|       | Electrical Design 2H  

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 2.

83530G Certificate of Technology — Electronics
83531G Certificate of Technology (Part-time) — Electronics

Course structure
To complete the academic portion of the above it is necessary to complete the core subjects listed and a minimum of thirteen units of the electives listed — of which at least four units must be in each of Stage 3 and Stage 4.

Core subjects (seventeen units)

| Stage |  
|-------|---|
| 1     | TE119  
|       | Circuit Theory 1H  
|       | TE123  
|       | Electronics 1H  
|       | TH116  
|       | Communications  
|       | TM123  
|       | Mathematics 1E  
| 2     | TE219  
|       | Circuit Theory  
|       | TE223  
|       | Electronics 2H  
|       | TE236  
|       | Digital Electronics 1H  
|       | TM223  
|       | Mathematics 2E  
| 3     | TE323  
|       | Electron-cdH  

Elective subjects (all two units except those marked * which are one unit)

| Stage |  
|-------|---|
| 1     | TE125  
|       | Wiring and Assembly Methods 1H  
|       | TE324  
|       | Properties of Materials  
|       | TM160  
|       | Physics 1H  
|       | TH180  
|       | Social Science 1H  
| 2     | TE225  
|       | Wiring and Assembly Methods 2H  
|       | TE236  
|       | Digital Electronics 1H  
| 3     | TE319  
|       | Circuit Theory 3H  
|       | TE337  
|       | Pulse and Digital Electronics 1A  
|       | TE320  
|       | Pulse and Digital Electronics 1H  
|       | TE338  
|       | Microprocessor Fundamentals  
|       | TE436  
|       | Digital Electronics 2H  
| 4     | TE422  
|       | Digital and Logic Control 1H (a)  
|       | TE420  
|       | Communications Measurements 1H (a)  
|       | TE438  
|       | Microprocessor Applications  
|       | TE421  
|       | Communications Techniques  
|       | TE439  
|       | Measurements Instruments 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 2.
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 Higher Technician courses

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, quality control and work study, are areas covered in these streams.

Design Drafting

Production, mechanical.

Students who are employed in drawing offices and possess the necessary qualifications may enter these courses.

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 to all branches of oxy-acetylene and electric arc welding.

An education department certificate is granted to students who pass the final examination in grade three with fifty per cent in theory and practice. With a pass mark of sixty-five 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 DL1 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 CB1 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 diploma 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.

Entrance requirements
Students who have attended secondary technical schools may obtain exemptions from some modules depending on the standard reached at Year 10 or 11. Intake tests will be necessary to ensure exemption when an apprentice commences the apprenticeship courses.

To qualify for proficiency pay, an apprentice must attempt obtain a pass in all eight modules studied for that year of the course and obtain an average of at least seventy per cent for the eight modules.

To qualify for the certificate of proficiency, an apprentice must attain the standard shown below:
- Fitting and turning, turning 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 Code</th>
<th>Module Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF017</td>
<td>Theory, Practice and</td>
</tr>
<tr>
<td>TF018</td>
<td>Related Studies</td>
</tr>
<tr>
<td>TF016</td>
<td>Module 16 – Heat Treatment</td>
</tr>
<tr>
<td>TF017</td>
<td>Modules 17-19 – Theory, Practice and</td>
</tr>
<tr>
<td>TF019</td>
<td>Related Studies</td>
</tr>
<tr>
<td>TF020</td>
<td>Module 20 – Revision and Craft exam</td>
</tr>
<tr>
<td>TF021</td>
<td>Module A51 – General Fitting</td>
</tr>
<tr>
<td>TF022</td>
<td>Module A52 – General Fitting</td>
</tr>
<tr>
<td>TF023</td>
<td>Module A53 – General Fitting</td>
</tr>
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<td>TF024</td>
<td>Module A54 – General Fitting</td>
</tr>
<tr>
<td>TF025</td>
<td>Module B51 – Welding</td>
</tr>
<tr>
<td>TF026</td>
<td>Module B52 – Welding</td>
</tr>
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<td>TF027</td>
<td>Module B53 – Welding</td>
</tr>
<tr>
<td>TF028</td>
<td>Module B54 – Welding</td>
</tr>
<tr>
<td>TF029</td>
<td>Module F51 – Gear Cutting</td>
</tr>
<tr>
<td>TF030</td>
<td>Module F52 – Gear Cutting</td>
</tr>
<tr>
<td>TF031</td>
<td>Module F53 – Tool and Gauge Making</td>
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<tr>
<td>TF032</td>
<td>Module H51 – Tool and Gauge Making</td>
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<td>TF033</td>
<td>Module H52 – Tool and Gauge Making</td>
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<td>TF035</td>
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<td>TF036</td>
<td>Module H54 – Tool and Gauge Making</td>
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<tr>
<td>TF039</td>
<td>Module C51 – Construction Equipment</td>
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<td>TF040</td>
<td>Module C52 – Construction Equipment</td>
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<td>TF041</td>
<td>Module C53 – Construction Equipment</td>
</tr>
<tr>
<td>TF042</td>
<td>Module C54 – Construction Equipment</td>
</tr>
</tbody>
</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).

Entrance requirements
All students must be indentured and registered as an apprentice with the Industrial Training Commission of Victoria. The normal prerequisite qualifications for admission to this course is completion of year nine with passes in mathematics, science and drawing/graphic communication.

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.

**Course detail**

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Description</th>
<th>Hours per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF601</td>
<td>Module 1 – Theory and Practice</td>
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</tr>
<tr>
<td>TF602</td>
<td>Module 2 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF603</td>
<td>Module 3 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF604</td>
<td>Module 4 – Theory and Practice</td>
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</tr>
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<td>TF605</td>
<td>Module 5 – Theory and Practice</td>
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<td>TF606</td>
<td>Module 6 – Theory and Practice</td>
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</tr>
<tr>
<td>TF607</td>
<td>Module 7 – Related Instruction</td>
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<td>TF608</td>
<td>Module 8 – Related Instruction</td>
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<tr>
<td>TF609</td>
<td>Module 9 – Theory and Practice</td>
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<td>TF610</td>
<td>Module 10 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF611</td>
<td>Module 11 – Related Instruction</td>
<td></td>
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<td>TF612</td>
<td>Module 12 – Theory and Practice</td>
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<td>TF613</td>
<td>Module 13 – Theory and Practice</td>
<td></td>
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<tr>
<td>TF614</td>
<td>Module 14 – Theory and Practice</td>
<td></td>
</tr>
<tr>
<td>TF615</td>
<td>Module 15 – Related Instruction</td>
<td></td>
</tr>
<tr>
<td>TF616</td>
<td>Module 16 – Related Instruction</td>
<td></td>
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</tbody>
</table>
Technician courses

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, 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 trainees may be encouraged to undertake advanced training in order to equip themselves for positions such as assistant draughtsmen, 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 doing 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/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TH140 English 1T</td>
<td>2</td>
</tr>
<tr>
<td>TM130 Mathematics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TA170 Science 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF126 Technician Drawing 1</td>
<td>2</td>
</tr>
<tr>
<td>TH240 English 2T</td>
<td>2</td>
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<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>

8361E 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/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF110 Applied Electricity 1H</td>
<td>2</td>
</tr>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
</tbody>
</table>

Specialist practices
TF179 Fluid Power 1T
TF479 Fluid Power 2T
One (1) approved elective
2 or 3

Approved electives
TF339 Instrumentation
TF419 Applied Heat 1T
TF358 Drafting Practice

8361E 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/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF419 Mechanics 2T</td>
<td>2</td>
</tr>
</tbody>
</table>

Specialist practices
TF329 Applied Heat 1T
TF429 Applied Heat 2T
TF339 Instrumentation

8361E 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/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF319 Mechanics 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF308 Engineering Practices 1</td>
<td>2</td>
</tr>
</tbody>
</table>

Specialist practices
TF358 Drafting Practice 1T
TF456 Drafting Practice 2T
One (1) approved elective
2

Approved electives
TF379 Fluid Power 1T
TF339 Instrumentation
TF429 Applied Heat 1T

8361E 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>
</tr>
</thead>
<tbody>
<tr>
<td>TM128 Mathematics 1P</td>
<td>2</td>
</tr>
<tr>
<td>TF116 Engineering Principles (Technician)</td>
<td>2</td>
</tr>
<tr>
<td>TH110 Technician Communications 1</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF119 Engineering Materials</td>
<td>2</td>
</tr>
<tr>
<td>TH210 Technician Communications 2</td>
<td>2</td>
</tr>
<tr>
<td>TF326 Technician Drafting 1T</td>
<td>2</td>
</tr>
</tbody>
</table>
### Year 3
- **TF359** Jig and Tool Drafting 1T  
- **TF318** Metrology 1T  
- **TF417** Production Processes and Development 1T  
- **TS543** Basic Supervision  

### Year 4
- **TF501** Toolmaking 1 Theory  
- **TF502** Toolmaking 1 Practice  

### Electives
- **TF469** Jig and Tool Drafting 2T  
- **TF420** Metrology 2T  
- **TF184** Work Methods Improvement 1A  
- **TF185** Work Methods Improvement 1B  
- **TF370** Tooling and Inspection  
- **TF378** Fluid Power 1T  
- **TF120** Ergonomics  
- **TF330** Materials and Processes 1A  
- **TF503** Toolmaking 2 Theory  
- **TF504** Toolmaking 2 Practice  
- **TF518** Production Processes and Development 2T  
- **TH385** Communications for Supervisors  

**Note:**
The Technician Certificate is awarded on completion of thirty or the above units.

### Career potential
This course is unique to Swinburne Technical College.

In our highly technical and scientific world, just about everything we come into contact with in our everyday life is manufactured to a specified level of acceptance, whether it is on a 'one-off', batch or an assembly line basis.

The work of the quality controller is to ascertain that the manufacturing process is controlled to such an extent that the goods produced have reached a suitable degree of accuracy or acceptance; thus maintaining the levels of interchangeability, quality and safety, so vital to our manufacturing industries.

The far-reaching effect of tasks performed by quality controllers:

(a) protects the consumer against the purchase of faulty manufactured goods,  
(b) maintains and promotes the company's image and reputation.

The field of application of quality control techniques can be as varied as from the clothing industry to the manufacture of car tyres; from infinitely precise measuring equipment to huge crushing machines. Career opportunities are equally as varied.

### Entrance requirements
The standard entrance 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 and to be employed in some function of quality control.

Prospective students who do not fit exactly into category (a) as shown should not be deterred from applying as the course is designed to enable students from the various fields involved in quality control to complete the certificate.

### Course structure

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours/week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First year</strong></td>
<td></td>
</tr>
<tr>
<td>TM120 Mathematics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TM160 Physics 1A and 1B</td>
<td>2</td>
</tr>
<tr>
<td>TH116 Communication</td>
<td>2</td>
</tr>
<tr>
<td>TF310 *Metrology 1T</td>
<td>2</td>
</tr>
<tr>
<td>TF115 *Machine Shop Practice 3A and 3B</td>
<td>4</td>
</tr>
<tr>
<td>TF359 *Jig and Tool Drafting 1T</td>
<td>2</td>
</tr>
<tr>
<td><strong>Second year</strong></td>
<td></td>
</tr>
<tr>
<td>TM220 Mathematics 2A and 2B</td>
<td>2</td>
</tr>
<tr>
<td>TF439 Method Study</td>
<td>2</td>
</tr>
<tr>
<td>TF417 *Production Processes and Development 1</td>
<td>3</td>
</tr>
<tr>
<td>TF230 *Materials and Processes 1A</td>
<td>3</td>
</tr>
<tr>
<td>TF216 *Machine Shop Practice 4A and 4B</td>
<td>4</td>
</tr>
<tr>
<td><strong>Third year</strong></td>
<td></td>
</tr>
<tr>
<td>TF321 Metrology and Inspection 1A and 1B</td>
<td>3</td>
</tr>
<tr>
<td>TF338 Instrumentation H (Production)</td>
<td>3</td>
</tr>
<tr>
<td>TF331 Mechanical Properties</td>
<td>2</td>
</tr>
</tbody>
</table>
Fourth year

TF461 Organisation and Management of Inspection 1A and 1B 3
TF421 Statistical Analysis 1A and 1B plus one approved elective 4

Electives

TF440 Production Control 1A and 1B 2
TF441 Computer Applications 1A and 1B 2
TF442 Reliability 1A and 1B 2
TF443 Electronic and Electrical Inspection 1A and 1B 2

*As this course has been designed basically for quality control in metal working industries, suitable in-service training in non-metal industries may be appropriate alternatives for the subjects marked.

The acceptance of possible alternatives is at the direction of the college and, as a guide to prospective students, the policy is of a flexible nature, rather than an attempt to draw well-defined alternatives, which may benefit only a few.

Certificate of Technology courses

83620G Certificate of Technology — Mechanical

Career potential

Mechanical engineering at the certificate level involves trained people in the manufacture and construction of equipment in such diverse fields as earth moving and construction, special large-scale kitchens, general and special purpose mechanical and production plants.

People with a Certificate of Technology — Mechanical, are employed as works engineers, i.e. engineers who maintain manufacturing equipment in order to ensure the smooth running of methods of production. They could also be employed in the area of development of new ideas and products.

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 area 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>
</tr>
</thead>
<tbody>
<tr>
<td>TH116 Communications</td>
<td>2</td>
</tr>
<tr>
<td>TM220 Mathematics 2A and 2B (2H)</td>
<td>2</td>
</tr>
<tr>
<td>TM160 Physics 1A and 1B (1H)</td>
<td>2</td>
</tr>
<tr>
<td>TS215 Behavioural Studies 1A</td>
<td>1</td>
</tr>
<tr>
<td>TS216 Behavioural Studies 1B</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM260 Physics 2A and 2B (2H)</td>
<td>2</td>
</tr>
</tbody>
</table>

Related background studies

(Maximum of eight units including not more than six basic units)
Basic       Unit value
TE110  Applied Electricity 1H  2
TE119  Circuit Theory 1H  2
TF133  Electrical Drafting 1H  2
TF351  Computer Techniques 1A and 1B  2
TF370  Tooling and Inspection Methods  2
TF184  Work Methods Improvement 1A  1
TF185  Work Methods Improvement 1B  1
TF318  Metrology 1A and 1B (TT)  2
TF338  Instrumentation 1A and 2A  2
TE133  Electrical Drafting 1A/1B  2
TE234  Properties of Electrical Materials 1A and 1B  2
TB195  Structural Drafting 1A and 1B  2
TB187  Structural Mechanics 1A and 1B  2
TB196  Structural Practices 1A and 1B  2
TB408  Foundations 1A and 1B  2
TF182  Work Measurement 1A  1
TF183  Work Measurement 1B  1

Advanced       Unit value
TE210  Applied Electricity 2H  2
TE319  Circuit Theory 2H  2
TE360  Electrical Drafting 2H  2
TF420  Metrology 2A and 2B (2T)  2
TE233  Electrical Drafting 2A and 2B  2
TB255  Structural Drafting 2A and 2B  2
TB257  Structural Mechanics 2A and 2B  2
TB296  Structural Practices 2A and 2B  2
TF360  Jig and Tool Drafting 2A and 2B  2

Basic practices
(As required, but must include the following twelve units: Applied Mechanics 1A and 1B, 2A and 2B, 3A and 3B, and 4A and 4B, Drafting 1A and 1B, 2A and 2B, listed above.)

Basic       Unit value
TF180  Mechanical Drafting 1A and 1B  2
TF121  Applied Mechanics 1A and 1B  2
TF327  Applied Heat 1A and 1B  2
TF230  Materials and Processes 1A  1
TF308  Engineering Practices 1A and 1B  2
TF378  Fluid Power 1A and 1B  2

Advanced       Unit value
TF250  Mechanical Drafting 2A and 2B (internally assessed)  2
TF221  Applied Mechanics 2A and 2B  2
TF328  Applied Mechanics 3A and 3B  2
TF427  Applied Heat 2A and 2B  2
TF330  Materials and Processes 2A  1
TF478  Fluid Power 2A and 2B  2

Specialist practices
(As required)

Basic       Unit value
TF458  Mechanical Design 1A and 1B  2
TF416  Machines and Mechanisms 1A and 1B  2
TF479  Mechanics of Fluids and Fluid Machinery 1A and 1B  2
TF448  Refrigeration and Air-conditioning 1A and 1B  2
TS431  Supervision 1A  1
TS432  Supervision 1B  1

Advanced       Unit value
TF457  Mechanical Design 2A and 2B, 2C and 2D  4

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83652G Certificate of Technology — Mechanical Design Drafting (1981 Syllabus)

Career potential
Mechanical design at the certificate level involves trained people in the design of equipment in such diverse fields as earth moving and road construction equipment, special large scale kitchen equipment and general purpose mechanical and production plant. People with a Certificate of Technology — Mechanical (Design Drafting), are employed as design draftsmen, chief draftsmen and project engineers.

Entrance requirements
The standard entry requirements for admission to the course are:
(a) Satisfactory completion of a year 1 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</th>
<th>Course</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Introduction to Design 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF455</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF310 Engineering Materials and Processes 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF311 Engineering Materials and Processes 1BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF550 Mechanical Drafting 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TM118 Mathematics 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF315 Engineering Principles 1AD</td>
<td>1/2</td>
</tr>
<tr>
<td></td>
<td>TF316 Engineering Principles 1BD</td>
<td>1/2</td>
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<tr>
<td>Stage 2</td>
<td>Design for Economic Manufacture 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF453</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF223 Mechanical Design 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF225 Mechanical Design 1BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF250 Mechanical Drafting 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF235 Applied Mechanics 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF236 Applied Mechanics 1BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF232 Properties of Materials 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF410 Electrical Machine Applications 1AD</td>
<td>1</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Design for Economic Manufacture 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF454</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF468 Mechanical Design 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF469 Mechanical Design 2BD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF375 Fluid Machinery and Applications 1AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF320 Applied Mechanics 2AD</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>TF322 Applied Mechanics 2BD</td>
<td>1</td>
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<tr>
<td></td>
<td>TF412 Thermodynamics and Heat Transfer 1AD</td>
<td>1</td>
</tr>
<tr>
<td>Stage 4</td>
<td>Design for Economic Manufactures 3AD</td>
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<tr>
<td></td>
<td>TF449</td>
<td>1</td>
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<tr>
<td></td>
<td>TF481 Mechanical Design 3AD (Specialist Unit)</td>
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<tr>
<td></td>
<td>Student to select ONE of:</td>
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</tr>
<tr>
<td></td>
<td>TF482 (a) Products and Mechanical Plant</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TF483 (b) Structures</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>TF484 (c) Process Plant and Pipe Work</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

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, of guarding against accidents and observing the law of the land especially as 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 requirements 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 eighteen elective units of which four must be from engineering practice and related studies.

Core units

<table>
<thead>
<tr>
<th>Unit value</th>
<th>Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>TM120 Mathematics 1A and 1B</td>
</tr>
<tr>
<td>2</td>
<td>TM160 Physics 1A and 1B</td>
</tr>
<tr>
<td>2</td>
<td>TH116 Communication</td>
</tr>
<tr>
<td>1</td>
<td>TS215 Behavioural Studies 1A</td>
</tr>
<tr>
<td>1</td>
<td>TS216 Behavioural Studies 1B</td>
</tr>
<tr>
<td>1</td>
<td>TF184 Work Methods Improvement 1A</td>
</tr>
<tr>
<td>1</td>
<td>TF185 Work Methods Improvement 1B</td>
</tr>
<tr>
<td>1</td>
<td>TF182 Work Measurement 1A</td>
</tr>
<tr>
<td>1</td>
<td>TF183 Work Measurement 1B</td>
</tr>
<tr>
<td>1</td>
<td>TF170 Tooling and Inspection Methods</td>
</tr>
<tr>
<td>1</td>
<td>TF284 Work Methods Improvement 2A</td>
</tr>
<tr>
<td>1</td>
<td>TF285 Work Methods Improvement 2B</td>
</tr>
<tr>
<td>1</td>
<td>TF286 Work Methods Improvement 2C</td>
</tr>
<tr>
<td>1</td>
<td>TF287 Work Methods Improvement 2D</td>
</tr>
<tr>
<td>1</td>
<td>TF282 Work Measurement 2A</td>
</tr>
<tr>
<td>1</td>
<td>TF283 Work Measurement 2B</td>
</tr>
<tr>
<td>2</td>
<td>TF382 Work Measurement 3</td>
</tr>
</tbody>
</table>

Advanced
Elective units
Engineering practice and related studies

<table>
<thead>
<tr>
<th>Basic</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF230</td>
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<tr>
<td>TF231</td>
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<tr>
<td>TF237</td>
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<td>TS150</td>
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<tr>
<td>TS151</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF330</td>
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<tr>
<td>TF221</td>
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<tr>
<td>TF427</td>
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<td>TF450</td>
<td></td>
</tr>
<tr>
<td>TS250</td>
<td></td>
</tr>
<tr>
<td>TS251</td>
<td></td>
</tr>
</tbody>
</table>

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 requirements of industry in the areas of Jig and Tool Design, Press Tool Design and Moulding Tool Design.

Tooling design covers a very broad range of skills, as illustrated by the breakdown into three specialist areas of study. The Jig and Tool designer is mainly concerned with the ‘making’ equipment used in mass production to improve the quality and accuracy of the article and at the same time improve the rate of production.

The Press Tool designer is concerned with the dies used to manufacture such diverse articles as body panels for cars, refrigerators etc. or those required to stamp coins.

The Moulding Tool designer is concerned with the design of moulds used to manufacture anything from car and truck tyres, plastic body panels for electrical equipment such as drills for the handyman, right through to the moulding of nylon gears for slot cars.

Entrance requirements
Prerequisites for students entering the course are as follows:

1. Standard prerequisite academic qualifications are passes in 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 experience. This may be the completion of the workshop practice modules of the fitting and machining apprenticeship course, or completion of Machine Shop Practice 1H and 2H from the Higher Technician Certificate in Jig and Tool Design, or approved work-based training.

Note
Where Principals vary the prerequisite academic qualifications, students admitted without having reached the required standard in Engineering Graphics or Workshop Practice, will be required to undertake a preliminary course of study in these subjects.

Course structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Unit value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM135</td>
<td>Mathematics 1H</td>
</tr>
<tr>
<td>TF123</td>
<td>Applied Mechanics 1P</td>
</tr>
<tr>
<td>TF154</td>
<td>Mechanical Drafting (Prod)</td>
</tr>
<tr>
<td>TH115</td>
<td>Communication 1A</td>
</tr>
<tr>
<td>TH116</td>
<td>Communication 1B</td>
</tr>
<tr>
<td>TF120</td>
<td>Ergonomics</td>
</tr>
</tbody>
</table>
### Year 2
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>TF128</td>
<td>MIC Tools and Processes</td>
<td>2</td>
</tr>
<tr>
<td>TF218</td>
<td>Materials and Heat Treatment</td>
<td>2</td>
</tr>
<tr>
<td>TF291</td>
<td>Applied Mechanics 2P</td>
<td>1</td>
</tr>
<tr>
<td>TF355</td>
<td>Gauge Drafting</td>
<td>1</td>
</tr>
<tr>
<td>TF280</td>
<td>jig and Tool Drafting</td>
<td>4</td>
</tr>
</tbody>
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### Year 3
Select one of 3.1, 3.2, 3.3

#### 3.1 Jig and Fixture
<table>
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<tr>
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<tr>
<td>TF380</td>
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<td>TF381</td>
<td>Metal Cutting 1</td>
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#### 3.2 Press Tools
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<td>TF290</td>
<td>Die Drafting</td>
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#### 3.3 Moulding Tools
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<td>TF389</td>
<td>Moulding Drafting and Design 1</td>
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<tr>
<td>TF390</td>
<td>Die Casting and Forging</td>
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### Year 4
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<tr>
<td>TF466</td>
<td>jig and Fixture Drafting and Design 2 and Metal Cutting 2</td>
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<tr>
<td>TF435</td>
<td>Press Tool Drafting and Design 2 and Special Processes</td>
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<tr>
<td>TF489</td>
<td>Moulding and Drafting and Design</td>
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### Post-trade courses

**83670E Post Trade Certificate — Toolmaking**

**Career potential**
Students who have already completed an apprenticeship course will develop a higher level of ability in the theoretical and practical side of tool and gauge room 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 (G, H and I).

**Course structure**

**Area of study**

**1st year**
- TF501 Toolmaking Theory 1
- TF502 Toolmaking Practice 1

**Unit 1**

**Principal and basic applications**
- Precision turning
- Precision boring
- Vertical spindle milling
- Precision grinding

**Unit 2**

**Associated studies, measurement and calculations**
- Micrometers and indicators
- Vernier instruments
- Application of toolmaking formulae
- Trigonometry
- Gauge blocks
- Measurement of angles
- Straightness and squareness testing
- Measurement by optical projection

**Unit 3**

**Workshop and laboratory activities**
- Turning operations
- Positioning of holes
- Milling operations
- Grinding operations

**2nd year**
- TF503 Toolmaking Theory 2
- TF504 Toolmaking Practice 2

**Unit 1**
- Relief turning
- jig boring
- Thread grinding
- Form tools
- Milled type cutters
- Lapping
- Precision grinding

**Unit 2**
- Calculations
- Thread measurement
- Surface finish
- Measurement of taper and form gauges
Special courses

836608 Electric and Oxygen-acetylene Welding — Post-trade

General
The courses have been designed to meet the increasing demand for general instruction in welding processes.
All courses cover both theory and practice.
To complete a course successfully, a student must obtain a pass in all grades of theory and practice and obtain at least fifty per cent of the marks allotted for each grade of welding.

Entrance requirements
There are no prerequisite qualifications for these courses, however, preference will be given to those students who are seeking welding qualifications in connection with their employment.

Certificates
The Victorian Department of Labour and Industry may grant Government Welding Certificates in accordance with Australian Standard 1796-1975, to applicants who have obtained a minimum of sixty per cent of marks for both Theory and Practice in Grade III Electric Welding or Oxy-acetylene Welding examinations. Documentary evidence, satisfactory to the examination authority, of acceptable training and/or industrial experience is necessary.

Course structure
Each course consists of three years part-time study. Both courses are run separately. Time allocations for both theory and practice in each course are identical.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TF710</td>
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<td>TF711</td>
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<td>TF710</td>
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<td>TF811</td>
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<td>TF920</td>
<td>4</td>
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<tr>
<td>TF921</td>
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</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.
TF415 Electric Welding Special

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.
TF708 Introduction to Welding

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 Engineering Division subject details

Engineering subject details

Air-conditioning 1T (TF348)
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, dem point, wet and dry bulb temperatures and measurement of air conditions and instruments used.

Air-conditioning 2T (TF448)
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 certificate courses of Electrical Design Drafting and Electrical Power.

The main areas of study are electrical fundamentals, network analysis, magnetism, instruments and measurements, electromagnetism, electronics, AC fundamentals.

Applied Electricity 2H (TE210)
Topics include AC fundamentals, complex notation, network theorems, resonance, circuit Q, polyphase systems, circuit transients, complex waveforms and harmonic analysis. 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 TF427)
Extension of Applied Heat 1H. Steady flow energy equation, power cycles, boiler plant, condensers, refrigeration, combustion, heat transfer.

Applied Mechanics and Applied Mechanics 1 (TB438 and TB425)

Applied Mechanics 1A and 1B (TF121)

Applied Mechanics 2A and 2B (TF221)

Applied Mechanics 1AD and 1BD (TF235 and TF236)
(2 units)
Force, 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 2AD and 2BU (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 capabilities, interpersonal relationships, conflicts, difficult problem solving, sociology and psychology. Limitations in handling certain situations and problems.
Boilermaking

Module 1 (TF601)

Module 2 (TF602)

Module 3 (TF603)
Electric welding machines and generators, accessories, etc. SAA codes. Gases used in the trade. Trade materials. Identification, application, LC steel plates and sections, sizes, calculations of mass for fabricated units. Marking-out and fitting. Manufacture of small tools.

Module 4 (TF604)

Module 5 (TF605)
Distortion in welds, causes, factors, correction methods. Fabrication procedures for rectangular containers, cyclindrical storage tanks. Assembly, material requirements, roof construction. Planning, design and fabrication of selected models and projects. Fabrication of unequal diameter pipes and branches.

Module 6 (TF606)
Defects in welds. Fabrication procedures for trusses and roof members as applied to structural members. Related trade mathematics. Fabrication procedures for pipe lines 45° and 90°. Electric welding techniques and exercises. Fabrication of small tools. Welding of single and multi-pass fillet welds.

Module 7 (TF607)

Module 8 (TF608)

Module 9 (TF609)

Module 10 (TF610)

Module 11 (TF611)

Module 12 (TF612)

Module 13 (TF613)

Module 14 (TF614)
Arc welding processes, submerged arc, TIG, MIG, resistance welding processes. Electric welding techniques, fillet welds, butt welds, pipe, rolled steel sections, round, angle, bevel, channel, joint preparations. Demonstrations of arc welding processes as outlined above. Demonstration and practice in allied gas cutting processes, stack, powder, heating, lancing, underwater, flame cleaning.

Module 15 (TF615)
Plane geometrical constructions. Plotting of cambers, PCP determinations, stud holes. Exercises involving the development of flat and curved. Regular revision of true length lines. Exercises to include tapered square and rectangular hollow units. Dihedral angles. Transition pieces, cylindrical offtakes, segmented bends, Right conical pieces. Intersections of right and oblique cones and cylinders. Spheres and hemispheres.

Module 16 (TF616)
Print reading and technical sketching. Exercises in reading of drawings, use of freehand sketches, dimensioning, use of welding symbols. Compiling of material lists. All types and varieties of rolled steel sections to be incorporated in drawing exercises.

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.

Communication (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 controls, 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, interrupts, the stack, sub-routines, PIA, ACIA, timing, DMA, programming aids, diagnostics.

Control Systems TH (Power) (TE422)
A basic introduction to the concepts of control system theory and practice in electrical technology. Development of analytical techniques necessary for maintenance and minor design procedures of power control systems.

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)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design and to develop an ability to interpret drawings and extract information from them.

Design for Economic Manufacture 2AD (TF454)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Design for Economic Manufacture 3AD (TF449)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Digital and Logic Control 1H (TE422)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Drafting Practice 1T (TF358)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Drafting Practice 2T (TF456)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Apparatus and Circuits (TE324)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Contracting and Estimating (TE501)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Design 2H (TE460)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting 1T (TE227)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting 2T (TE325)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting 3T (TE425)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting 1H (TE133)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting 2H (TE233)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Drafting Principles 2H (TE240)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Machines 1H (TE310)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Machine Applications 1AD (TE410)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electrical Measurements (TE419)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electric Motor Control 1 (TE150)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

Electric Motor Control 2 (TE250)
Aims: to provide students with an appreciation of the principles of mechanical, electrical and electronic design.

American Association of University Women

A more detailed syllabus is available on request.

Electrical Mechanics

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Module 12 (TE02) Electrical Wiring
Module 13 (TE013) Electrical Wiring
Module 14 (TE014) Electrical Wiring
Module 15 (TE015) Electrical Wiring
Module 16 (TE016) Electrical Wiring
Module 17 (TE017) Electrical Wiring
Module 18 (TE018) Electrical Wiring
Module 19 (TE019) Electrical Wiring
Module 20 (TE020) Electrical Wiring
Module 21 (TE021) Electrical Wiring
Module 22 (TE022) Electrical Wiring
Module 23 (TE023) Electrical Wiring
Module 24 (TE024) Electrical Wiring
Module 25 (TE025) Electrical Wiring
Module 26 (TE026) Electrical Wiring
Module 27 (TE027) Electrical Wiring
Module 28 (TE028) Electrical Wiring

Electrical fitting: Measuring tools, keyways, belt drives, abrasives, metals, limits and fits, screw cutting, lathe finishing, off.

Electrical wiring: DC applications, alternator, rectification, DC generators, current, voltage, power, losses, AC motors, meters, earthing, distribution systems, illumination, tariff, switchboards, insulation, cables and wires, heating, regulations, safety.

Single-phase AC: Alternator, AC circuits, resistance, reactance, impedance, vectors, units, phase relations, power and power factor transformers, AC motors, measuring instruments, single phase transformer — 2 and 3-wire, rectification, tariffs, earthing, switchboards, costing, licensing regulations.

Three-phase generation: Star and delta connections, three-phase power and energy, three-phase transformers, transmission and distribution, power factors, three-phase motors and starters, ferrous and non-ferrous metals, resistors, luminous discharge lighting systems, switchboards, testing, regulations.

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 A (TE150)
Electronics B (TE161)
(See Industrial Electronics 1T)

Electronics 1H (TE123)
A course designed to present an overview of modern electronics practice with emphasis on developing proficiency in examining techniques and the basic understanding and limitations of test equipment.

Electronics 2H (TE223)
Introductory course dealing with the following topics — diode and 2N3904 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.

Electronics 3H (Power) (TE340)
A course designed for those students specialising in electrical work to gain an understanding in modern electronics practice also. Topics include — power supplies, operational amplifiers, power amplifiers, DC amplifiers, amplifier testing and performance oscillators, thyristors, and their application, triggering devices and circuits, timers.

Engineering Materials and Processes 1AD and 1BD (TF310 and TF311)
Properties of metals, characteristics of non-ferrous metals, plain carbon steel, alloying elements, cast iron, heat treatment, hardness, bearing materials, timber, concrete and lubricants, applications and usage of machine tools, casting, forging, material handling.

Engineering Practices 1A and 1B (TF308)
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 turning practice, and the remainder in the workshop of the projects using the lathe, drilling and milling machines, and the shaper or slotter, as well as some initial elementary fitting work.

Engineering Principles 1AD and 1BD (TF315 and TF316)
Forces, moments, pin-jointed frames, kinematics, curvilinear motion, collisions, circular motion, friction, energy, work, power, sound, fibre optics.

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)

Ergonomics (TF120)
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.

Fitting and Machining (Apprentices)

Module 1

Module 2
Lathe work. Safety. Operational planning.

Module 3

Module 4
Turning operations. Cutting fluids. Equipment used for setting up. Science and materials.

Module 5
Filing, Drilling, Machine cutting tools.

Module 6
Turning operations. The shaping machine.

Module 7
Screwcutting, Grinding.

Module 8

Module 9
Lathe operations, cemented carbide cutting tools, economical use of machine tools. Indicators.

Module 10
Revision of addition, subtraction, multiplication and division of decimals, simple and compound ratios, economical use of machine tools, revolved and removed sections, dimensioning and tolerances, sketching, assembly and detail drawings. Bearing metals, copper and nickel alloys, joining of metals.

Module 11
Screw cutting, form turning. Turret and capstan lathes.
Module 12
Calculation of minor diameters, gear ratios, revision of trigonometry. Aligned and pictorial views, geometric tolerances, assembly and detail drawings, sketching. Systems of limits and fits, basic gauges, metric measurement.

Module 13
Fitting, checking a lathe for accuracy, setting up and marking out, scraping, lubricants, bearings and clutches.

Module 14
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 hydraulics.

Module 15
Milling machine and operations, types and uses of cutters, arbors and adaptors, speeds and feeds, attachments.

Module 16
Materials and heat treatment, pyrometry, plain carbon and alloy steels, surface hardening, nitriding.

Module 17
Multiple start threads, locating methods, cutting and checking gear ratios, revision of trigonometry, calculations, tool sharpening.

Module 18
Operational planning and production tooling. Uses of jigs and fixtures, consideration of machining operations, technical sketching and detail drawing, surface finish symbols.

Module 19
Precision cylindrical and surface grinding, plain and universal cylindrical grinding machines, parallel grinding and grinding to a shoulder, lapping work centres, surface grinding plain and angular surfaces, work holding methods.

Module 20
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, air 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 B51/B52/B53/B54 (Oxy-acetylene)
Oxy-acetylene process, personal aspects, care of equipment, safety, pre-weld preparation, welding techniques, hard surfacing, welding of mild steel, welding of thermo-plastics, heat treatments, identification of metals, fusion welding of cast irons, bronze weldings, welding of aluminium.

Welding B55/B56/B58 (Electric arc welding)
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

Tool and Gauamaking H51, H52, H53, H54
Precision measurement — standards of accuracy, sources of error in workshop measurement, direct versus comparative measurement, gauging, measuring instruments, measuring with precision instruments. Helical milling, tool and cutter grinding. Explanations of toolroom functions, press tool-making, die-making for plastic and die casting, tool and gaugemaking.

Construction Equipment C51/C52/C53 (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.

Construction Equipment C54 (Industrial Pneumatics)
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

Module 3
Theory and practice. Files and filing, chisels and chipping, screw threads, drills and drilling, turning operations, equipment used for setting up and holding plain work on machines, cutting fluids.

Module 5
Theory and practice. Files and filing, drills and drilling, turning operations, the shaping machine, machine cutting tools.

Module 7
Theory and practice. Files and filing, drilling, grinding practice, simple screw cutting, the slotting machine and planning machine.

Module 9

Module 11
Theory and practice. Single start vee and square threads, form turning, turret and capstan lathe.

Module 13
Theory and practice. Accurate fitting and maintenance of pumps, clutches and bearings, checking a lathe for accuracy, marking out, scrapers and scraping, lubricants.

Module 15
Theory and practice. Milling operations, the milling machine index, tooth forms of milling cutters.

Module 17
Theory and practice. Multi start threads.

Module 19
Theory and practice. Precision cylindrical grinding, surface grinding.
Modèle 20
Theoretical and practical revision of modules 1-19 inclusive. Theoretical (three hours) and practical examination (five hours) of work covered in 1-19.

Modules 21-24 inclusive
Four (4) alternative modules to be chosen from the following areas:
A. General Fitting
B. Welding
C. Construction equipment
D. Turning and boring
E. Milling
F. Gear cutting
G. Grinding
H. Tool and gauge making
I. Metrology

Fluid Machinery Applications 1A (TF375)
Fluid statics and dynamics problems and principles as applied to engineering components. Selection and application of turbo machinery. Principles of water flow in pipes, pipe sizes and pump applications.

Fluid Power 1T (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 2T (TF477)
Knowledge of hydraulic and pneumatic components is assumed. Explanation of the emphasis of this course is on the analysis and design of power and logic circuits.

Foundations 1A and 1B (TR405)

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, carbonising, nitriding and induction heating. Metallography preparation of specimens, micro-examination of both unheat-treated and heat-treated steels. Hardness testing, mechanical testing of steels.

Industrial Electronics 1T (TE326)

Industrial Electronics 2T (TE412)

Industrial Electronics 3T (General) (TE413)

Industrial Electronics 3T (digital control) (TE415)

Industry and Society (TS128)
The communication 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 union/employer organisations, population growth, the environment, the influence of Government on industry and society.

Instrumentation H (TE338)
Extension of metrology and machine tools, where principles, construction, calibration and verification of more common instrumentation procedures are developed. Emphasis is placed on functional tests of electronic equipment. Pneumatic circuit elements. Measurement of bias qualities, measuring circuits, read-out systems, automatic control, equipment evaluations, non-destructive testing methods.

Instrumentation 1T (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 tests 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 documentation, general management tasks, basic business functions — financing, purchasing, staff policies, sales and marketing, operating techniques and controls of above.

Introduction to Design 1A and 1B (TF455 and TF355)
Written and oral communication, job brief, design influencing factors, calculations from reference material, economics, functional design of levers, wheels, shafts, keys, brackets 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 economic activity, the labour market.

Introduction to Law 1A (TS243) 1 unit
History and development of Australian Law and system of courts. The roles of court personnel. Acts of parliament, their purposes, procedures and interpretation. Case law and the doctrine of precedent. The application of the law, involving a detailed study of one or two areas such as negligence, absolute liability, Goods Act, consumer protection, Noise Pollution Act, Workers’ Compensation Act, Restrictive Trade Practices Act, legal concepts of property and types of law.

Introduction to Law 1B (TS244) 1 unit
Law of contract, including, types of contracts, requirements for a valid contract, conditions under which contracts are voidable, remedies for breach of contract. Legal aspects of sole traders, partnerships and companies including rights and liabilities of owners, formation procedures etc. Advantages and disadvantages of forms of ownership. Consumer protection including a study of the strengths and weaknesses of the Goods Act and Hire Purchase Act. Cheques, their legal status and the effects of different types of crossings.

Jig And Tool Drafting 1T (TF359)
The design and drawing of simple drilng, 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 2T (TF459)

Jig And Tool Drafting 2H (TF260)
This subject covers basic jig and tool drafting 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 Leaving Drawing A. A pass in Fitting and Machining Trade Drawing 2 may be acceptable for certain courses. Projection, arrangement and detail drawings. Methods of fastening, transmission, Dimensining. Introduction to structural steel framework.

Machine Shop Practice 3A and 3B (TF115)
Multi-start threads, machine grinding, milling, jigs and fixtures.

Machine Shop Practice 4A and 4B (TF216)
Gearing, advanced machining.

Machines and Mechanisms 1A and 2B (TF416)
The subject provides revision of basic applied mechanics and covers gearing (including epicyclic, helical, hypoid and worm applications), couplings, static and dynamic balancing of reciprocating masses, chain drive design, vibrations in machine design, variable speed drives, differential drives and a number of miscellaneous mechanisms.
All topics are covered using practical examples and suitable excursions where possible.

Materials and Processes 1A (TF230)

Materials and Processes 2A (TF330)

Mathematics 1A and 1B (IH) (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.

Mathematics 1AD (TM118) (1 unit)
Algebra, logarithms, indices, simultaneous equations, quadratic equations, use of calculators, computer hardware and software, use of BASIC language.

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 functions; integration and antidifferentiation; antidifferentiation; complex numbers; small increments and approximations; 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. Booklets 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, Year 10 mathematics or equivalent and adult entry. Assessment. Periodic tests and assignments and a final three-hour examination in November. This course teaches basic mathematics of algebra and trigonometry and assumes very limited pre-entry knowledge of those areas. Topics covered are fundamental operations 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 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.

References
Supplied notes; students enrolled in TM230 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 service subject for a number of certificate qualifications 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 1E (TM123) the topics include: complex numbers, limits, differentiation and applications, integration and applications, differential equations, Boolean algebra.

References

Supplied notes.


Mathematics 3H (TM320)

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 examination (fifty per cent).

The final stage in mathematics for the COT 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.


Mathematics 1P

Use of calculator, algebraic manipulations, 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 power systems, ergonomics, safety, lifting and hoisting equipment.

Mechanical Design 2A, 2B, 2C, 2D (TF457)


Mechanical Design 2AD and 2BD (TF468 and TF469)

Analysis of design problems to determine loadings of the physical size 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, creep, hardness and cupping. Verification of correct heat treatment. Typical defects and guide in critical survey 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 employed and interpretation of results. Practical work involving mechanical testing and testing for surface defects, interpreting results.

Mechanical Drafting 1A and 1B (TF190)

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 skeletal 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 (TF190)

Furniture and equipment, use of SO271, sectioning, and detail drawings, developments (solid geometry).

Mechanical Drafting 2AE and 2BE (TF259)

This subject is similar in format and content to Mechanical Drafting 2AK and 2BK, emphasis is placed on the practical development of assembly and detailed drawings to AS1100 drawing standard. The drawings are prepared on AZ tracing paper and cover the field of practical design by drawing 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 IBK, with the additional emphasis placed on drawing power transmission elements, such as gearboxes, 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, limits and fits, bearings, both plain and rolling contact bearings, levers. All drafting, comprising both skeletal and formal drawing, is done on tracing paper.

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 flow visualisation, 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 analysis and similarity, rotodynamic machinery — pumps, fans, fluid coupling, and torque converters.
Metallurgy 1T (TF227)

Method Study (TF439)
History of work study, relationship of methods of study and work management. Benefits of work study to management and employers. Field of application; procedure in making an investigation; methods of observation, methods, study symbols, recording of information on charts. Uses and limitations of process charts, flow process charts, right and left hand charts. Principles of easy movement; workplace layout; Materials handling. Necessity for work measurement; objectives of work measurements. Techniques for measuring work tasks.

Metrology and Inspection H (TF321)
A more theoretical approach to the fields of metrology and gauging. Emphasis is placed on equipment used, component identification reference to various current standards. Metrology IT may be considered as 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 year for one semester or two hours per week (part-time) during the year 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 core and electives. The core topics include, systems of units and dimensions, vectors, kinematics, dynamics, work-energy-momentum and electro-statics. The electives include topics such as thermodynamics, electricity, statics, acoustics, fluid mechanics and electro-magnetism. Students are expected to complete each of the core units at a mastery level of sixty-five per cent.

References
The material required for the successful completion of the course is provided by the college in the form of booklets. However if further reading is required the texts most suitable are those with the ‘basic physics’ titles or ‘introduction to physics’, provided they deal in SI units.

Physics 2H (M260)
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 (TF237)

Production Control H (1A and 1B) (TF440)
Designed to give an understanding of general management and financial controls. Topics include factory organisation, functional control, production control, psychology in industry, Industrial legislation.

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 (Machine Shop 1H and 2H), Fitting and Machining 5 or Toolmaking 1 and Production Processes and Development IT, H or approved electives.

Production Processes and Development 1T (TF417)

Production Techniques 1A (TS150)
Introduces manufacturing industries and sub-systems. Types of production organisation. Processes and controls applied in quantitative 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 of the company.

Production Techniques 2B (TS251)
Examine the practical methods of project management through the use of network planning, efficiency controls and problem-solving techniques.

Properties of Electrical Materials 1A and 1B (TE226)

Properties of Materials 1A (TF232)
Dielectric, magnetic, ferro-magnetic, 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 (TE234)
Metallurgy, ferro-alloys, tensile of metals, magnetic alloys, non-ferrous metals and alloys, non-metallic materials, joining of metals, processes applied to electrical apparatus, corrosion.

Pulse and Digital Electronics (TE320)
Introduction to pulse and digital techniques. Topics include compensated voltage dividers, low pass and high pass passive filters, clipping, clamping, transistor switching, pulse devices, mos devices, multi-vibrators, IC timers, comparators and monostable devices, logic gates, logic families, flip flops, MSI and LSI devices, types of display.

Refrigeration 1T (TP349)
The theory of heating and cooling of liquids and vapours. The study of vapour compression cycle using ammonia, R12 and R22 refrigerants, description of refrigeration equipment and different types of refrigerants. Sizing of refrigeration equipment.
Refrigeration 2T (TF449)
The study of compression, volumetric efficiency, compressor losses, multi-stage compression, flooded systems, capacity control, machinery components in a VC system, absorption refrigeration and heat transfer system faults in a simple VC system. Refrigeration piping design. Application of refrigeration for preservation of food and air conditioning.

Refrigeration and Air-conditioning 1AM and IBM (TF448)
The course of study provides the student with an appreciation of the principles and practices of refrigeration and air-conditioning. The course amounts to three hours per week for the whole year. The syllabus outlines a follow-up properties of refrigeration, analysis of the vapour compression cycle, some operating characteristics of the whole cycle, descriptive work on the principle components, description and reason for major auxiliary components, descriptive treatment of absorption systems, common faults 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 and manufacture for reliability. Data collection.

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 final three hour examination in November. The course is aimed at teaching basic physics in SI units, vectors, equilibrium, kinematics, Newton's laws of motion, work, power, and energy, heat, Ohms law, and basic electric circuits.

References
Supplied notes. Students enrolled in TM170 usually study Mathematics 1T (TM130) concurrently, the two subjects being time-tabled in a four-hour block.

Science 2T (TM270)
Two hours per week, evening over two semesters. Prerequisites: Science 2T, adult entry, or qualifications deemed equivalent by the Mathematics/Science head of department. Assessment: Class work (forty per cent) and final examination (sixty per cent). An extension of Science 1T, the topics include: electricity and magnetism, advanced units in electric circuits, fluid statics, fluid dynamics, optics and wave motion, thermodynamics, rotational kinematics, rotational dynamics.

References
Supplied notes. Students enrolled in TM270 usually study Mathematics (TM230) concurrently, the two subjects being time-tabled in a four-hour block.

Social Science 1H (TH180)
The subject aims at improving social awareness and cultivating inter-personal relationships. Experience is provided with analysing and solving problems in this area, developing facility and willingness to cope with social change. Learning is through group experience, dialogue, lectures and case studies.

Social Science 2H (TH280)
Attempts to understand the work environment in relation to human needs. Experience is provided with processes that lead to change in the individual and the work environment. Study of how organisations operate and of the inter-relationships between employer and employee. Methods include visits to industry, syndicate activities, involvement in organisations and case studies.

Social Science 3H (TH380)
Concern is with the role of a supervisor. How to relate basic knowledge of human behaviour to work relationships. Introduction to basic principles of supervision within organisations. Use is made of studies experiences, syndicate, lectures, simulations, role identification.

Statistical Analysis H (TF421)
Basic and statistical inference topics include hypothesis testing, process control and variables, attributes, acceptance sampling, significance testing.

Structural Drafting 1A and 1B (TB195)
Prerequisite for this subject is a pass in Leaving Technical Drawing A. Course includes practical drafting and lectures on use of steel sections, splicing, connections, standard drawing practice. Structural terms, reinforced concrete, timber.

Structural Drafting 2A and 2B (TB295)
Prerequisite is a pass in Structural Drafting I. 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)

Principles of Work Relationships (TH196)
Designed to give an appreciation of surveying theory and practice and an introduction to the construction and structural consideration of industrial types buildings.

Principles of Work Relationships 2A and 2B (TB296)
Extends Structural Practices 1H and also includes industrial building roof design and multi-storey building construction.

Supervision (Electrical) (TE506)

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 exchangers, selection and testing of air compressors and internal combustion engines. The selection of fuels. 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

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 location and includes simple sketches of designs of drilling, 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 IT"
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 — Oxygen and Acetylene
Electric Welding, Theory 1 (TF710)

Electric Welding Practice 1 (TF711)

Electric Welding Theory 2 (TF810)

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 HIV position up to 12 mm, multiple pass. Vertical up and down, overlapping, horizontal positions, up to 100 mm. Joining of RSW to LCS plate in vertical position, single and multiple pass. Butt welds: electrode requirements as for filler welds. Prepared single and double Vj. Flat, vertical up 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 as many units as possible.

Electric Welding Theory 3 (TF910)
General knowledge of SAA codes relating to welding. Safety requirements, welding, cutting, general, personal and operational requirements related to various applications. Elementary first aid requirements. Quality control, inspection and testing of welds, destructive and non-destructive methods. Internal and external weld detect 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, friction.

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. Demonstrators of welding and cutting at special steel, terrous and non-ferrous, with as many processes as possible.
Oxygen-acetylene Welding Theory 1 (TF270)
General description, safety requirements, personal safety requirements, toxic fumes, hazardous areas. Care and control of plant and equipment. Gas use and storage, use of flashback and backfire, causes. Manifold systems, operation, maintenance.

Definition of common terms.

Chemistry of flame, heat.
Types of welding flames, appearance, uses, effects, applications.
Identification of metals. Welding of LC steel, methods, applications.

Oxygen-acetylene Welding Practice 1 (TF271)
Setting up and operation of equipment. Care and control of equipment. Filling of various types of welding torches. Welding of 1.6 mm LC steel. Forehand and backhand techniques, closed butt, corner, open butt, square, flat, vertical, horizontal. Welding gas - oxygen, carbon dioxide, and aluminium. Fillet welds up to 3 mm thickness. Pad welds. Butt welds in 10, 12 and 25 mm square sections. Fusion welding of grey cast iron. Brazing and cast iron.

Oxygen-acetylene Welding Theory 2 (TF280)

Oxygen-acetylene Welding Practice 2 (TF281)
Prepared butt welds. 5 mm plate, flat, vertical overhead and horizontal. Fusion welding of 1.6 mm copper sheet, sputtering and sputtering. Low temperature brazing. Welding of stainless steel, fusion 1.6 mm sheet. Hardsurfacing, application. Welding of 80 mm pipe in vertical position. Repairs to castings, grey cast iron and aluminium. Practical demonstrations, thermoplastics, vapi-flux, powder coating, welding of die-cutting materials, flame hardening, gouging, machine cutting with templates.

Oxygen-acetylene Welding Theory 3 (TF290)

Oxygen-acetylene Welding Practice 3 (TF921)
Fusion butt welds 1.6, 3, 5 mm and 6 mm LC plate in all positions. Fusion butt welds in 1.6 mm aluminium, flat, horizontal, vertical, overhead, corner. Fusion welds, butt, copper, brass, silicon bronze, stainless steel 1.6 mm flat position. Low temperature brazing, fillet and lap joints, copper and aluminium. Bronze welds, fillet lap butt joints, cast iron, restricted access butt joints.
Fusion welds, butt LC steel 80-100 mm, nick break and bend specimens. Fusion welds - 90 deg branch LC 80-100 mm fixed and horizontal, visual and macro inspection. Demonstrations of procedures and techniques when welding stainless steel and non-ferrous metals with TIG welding processes.

Work Measurement 1A, 1B (TF182, TF183)

Work Measurement 2A, 2B (TF282, TF283)
Frequency studies, interference to production. General data system. Statistical work sampling. Non-repetitive work measurement. Master clerical data. EPS resources contributing to capacity. Filing systems.

Work Measurement 3 (TF382)
Wage payment plans. Labour budgets and controls. Complete techniques project.

Work Methods Improvement 1A, 1B (TF184, TF185)

Work Methods Improvement 2A, 2B (TF284, TF285)

Work Methods Improvement 2C, 2D (TF286, TF287)
Value analysis, Product costing, Maintenance, Safety, Quality control, EDP and work improvement, Packaging, Materials control, Production planning.

Work Study 1H (TF337)
Methods of study and work management, Investigational and observational procedures. Process charts, Layout and materials handling, Techniques for measuring work tasks.
general studies division

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84741Y Humanities/Business — part-time
84840Y Science/Engineering — full-time
84841Y Science/Engineering — part-time

Certificate of Applied Science
84820G Science Laboratory
84821G Biology Technician (to be approved)

Compensatory and Bridging
84725Y Reading, Writing and Study Skills
84860C Tertiary Bridging Physics
84860C Tertiary Bridging Mathematics
84980Y English Workshop
84980Y Volunteer Tutor Training
84980Y 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
Seventeen 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.
**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 ownerships; analysis and interpretation of final reports and funds statements.

**Art in Society (TH003)**

In this subject, students examine the development of visual arts and its role in society, especially in the twentieth century. The activities of artists are to be a contribution to and reflection of the community's understanding of itself. This theoretical and historical approach is complemented by practical workshops in which students explore the language of the visual arts, through their own activities in the areas of drawing, painting and selected media.

Theoretical sessions of two hours per week comprise lectures and tutorials using visual materials, such as slides and videotapes.

The history of art is discussed, together with the philosophical approaches to questions concerning the appreciation of art and the general arts of artistic activity.

Practical sessions of three hours per week concentrate on exploration of the means available for communication in the areas of drawing and painting and electives such as photography, collage and simple print making.

**Biology (TM004)**

Five hours per week.

Continuous assessment based on tests, assignments, practical work and one major examination. The course investigates, 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.

**Chemistry (TM005)**

Three hours of theory and two hours of laboratory work per week.

Prerequisites: Year 11 Chemistry.

Assessment: Tests, assignments, practical work and two major examinations, one at the end of each semester. The syllabus covers stoichiometry, atomic structure, bonding, periodic classification, thermodynamics, chemical kinetics, chemical equilibria, redox reactions, electrochemistry, organic chemistry, polymer chemistry.

**Concepts of Mathematics (TM027)**

Four hours per week. Prerequisite: Year 11 (Applied Science) standard mathematics. Assessment consists of seven topic tests requiring a mastery at the seventy-five per cent level, a computer assignment, a test in an option topic and a final optional credit examination.

The main approach to theoretical material is through considering possible methods of solving problems. The history of the original discovery of this solution will be given to extend the students' insight into the development of mathematics and to general ideas about mathematics. Instruction is therefore mainly the traditional class type for some topics but in some areas considerable use will be made of interactive computer facilities, audio-visual aids, student talks, projects and library facilities.

The following topics will be studied:

1. Logics
2. Set Theory, Counting and Binomial Theorem
3. Probability I
4. Probability and Statistics I
5. Matrices
6. System of Equations and Inequalities (Linear Programming)
7. Games Theory and Markov Chains
8. Computing (Computing will take one hour per week)
9. Option Topic to be arranged with students

**References**

Caffigan, L.G. and Nenno, R.B. *Finite Mathematics* with Application to *Life*, 2nd edn, California, Goodyear, 1979

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**Subjects**

- Accounting (TS009)
- Art in Society (TH003)
- Biology (TM004)
- Chemistry (TM005)
- Concepts of Mathematics (TM027)
- Economics (TS008)
- English (TH010)
- History of Western Civilization (TH015)
- Introduction to Modern Government (TH020)
- Introduction to Italian (TH050)
- Mathematics (Science) (TM026)
- Mathematics (General) (TM030)
- Media Studies (TH032)
- Physics (TM040)
- Study of Ideas — Philosophy (TH045)
- Themes in Australian History (TH001)

**Pre-requisites 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 but now wish to return, there are usually a number of places available for other applicants.

Closing date for applications is 10 February, 1982. However, applicants who apply by 8 December, 1981 will be given preference.

**Enquiries**

Division Secretary, 819 8159

Information Office, 819 8444

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Subject information at a glance:

- Concepts of Mathematics (TM027)
- Economics (TS008)
- English (TH010)
- History of Western Civilization (TH015)
- Introduction to Modern Government (TH020)
- Introduction to Italian (TH050)
- Mathematics (Science) (TM026)
- Mathematics (General) (TM030)
- Media Studies (TH032)
- Physics (TM040)
- Study of Ideas — Philosophy (TH045)
- Themes in Australian History (TH001)

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- Study of Ideas — Philosophy (TH045)
- Themes in Australian History (TH001)

- Tertiary Orientation Program subject details
- Accounting (TS009)
- Art in Society (TH003)
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- Concepts of Mathematics (TM027)
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- Media Studies (TH032)
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- Study of Ideas — Philosophy (TH045)
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Swinburne Technical College
Economics (TS008)
The aim of this course is to introduce students to the economic aspects of human behaviour with emphasis upon the application of theories and principles to economic problems and social issues within the framework of the Australian economy. The underlying theme for this introductory course in economics is the impact of economic activity upon human welfare. The course may be attempted by students who have not studied economics previously.

English (TH010)
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, and formation of social studies.

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 the Ancient World, especially Greece and Rome and Europe in the 19th and 20th centuries particularly the problems facing Western Civilisation this century.

Introduction to Italian (TH050)
This course provides students with an introduction to the Italian language using a study of Italian culture to acquire the basic skills of communicating. Through this technique students will be introduced to linguistic concepts which link the culture and civilisation of Italy to that of the Western world. A brief geographic and historical survey of Italy will conclude with a sociological perspective of the situation of Italian immigrants in Australia.

Introduction to Modern Government (TH020)
The course is designed to allow students to make a study of certain aspects of Australian politics. The emphases are 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)
Five hours per week for two semesters. Prerequisite: a pass in Mathematics I and II at Year 11. Assessment: unit tests, assignments and two major exams, one at the end of each semester. The course is designed to cover the fundamental mathematical ideas and skills required by students intending to proceed into degree level science and engineering courses. The syllabus covers such areas as algebra, exponentials and logarithms, circular functions, curve sketching, differentiation, complex numbers, integral calculus, vectors, differential equation and kinematics.

References
Other printed notes.

Mathematics (General) (TM030)
Six hours per week, daytime or four hours per week, evening. Prerequisite: a pass in Year 11 mathematics. Assessment will be made on a continuous basis. The final grade obtained by each student is based upon performance in ten (approximately) compulsory topic tests plus two assignments. To achieve a credit level pass, students will also be assessed on a final three-hour examination based on the whole year's work. The course covers fundamental mathematical ideas and skills needed by students who intend pursuing courses in business, social sciences and other tertiary courses such as physical education, nursing and physiotherapy. The syllabus includes sets, functions and relations, linear algebra, matrices, probability, statistics, sequences and series, calculus.

Reference

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. Other aspects covered in detail are the language, effectiveness and impact of these media. There is a small component of practical film work in the course.

Physics (TM040)
Five hours per week, daytime or four hours per week, evening. Prerequisite: a pass in Year 11 Physics, or equivalent. Assessment consists of two end-of-semester examinations, laboratory work and tutorial assignments. The course is centred around experimental work and three hours per week are spent in the laboratory. The main topics are: geometrical optics; mechanics of straight line, circular and simple harmonic motion; experimental analysis; electrostatics, electromagnetism and electric currents; light; atomic physics. A small project, which may be of a theoretical or practical nature, is usually undertaken towards the end of the year.

References

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 1 — Introduction to Ideas of Philosophy
In this subject, questions about man are explored. People in society are studied; their rights, freedoms, responsibilities, what they think is 'fair'. Individual attitudes to life and death are explored, and the purpose to human existence. Whether we are free beings, or whether our lives are determined. The possible values and life-styles there are from which to choose.

Study of Ideas 2 — Introduction to Ideas of Psychology
This is a humanistic study of behaviour. The focus is upon inner feelings and attitudes and how individuals see themselves and others. How can people change? The subject includes a study of theories and psychological models. Freud, Adler, Glasser, Maslow and Rogers explain human behaviour.

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.

Reading, Writing and Study Skills (TH070)
A return to study course with an emphasis on writing skill, efficient reading, comprehension and study skills. Individual assistance is the important ingredient for students new to study.
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 technicians in modern laboratory technique and methods, capable of providing immediate technical support to professional scientists, engineers and teachers.

The purpose of this course is to produce graduates who, skilled in modern laboratory technique and methods, are capable of providing effective technical support to governmental and educational laboratories. 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 a 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.

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>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
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<tbody>
<tr>
<td>TA08</td>
<td>Chemistry 1</td>
</tr>
<tr>
<td>TA109</td>
<td>Chemistry Laboratory Techniques 1</td>
</tr>
<tr>
<td>TA121</td>
<td>Physics 1S</td>
</tr>
<tr>
<td>TA143</td>
<td>Computations</td>
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</tbody>
</table>

**Category 2A (Technicians in industrial, college and governmental laboratories)**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>TA144</td>
<td>Statistics</td>
</tr>
<tr>
<td>TA330</td>
<td>Methods of Separation</td>
</tr>
<tr>
<td>TA455</td>
<td>Electrochemical Methods</td>
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<tr>
<td>TA456</td>
<td>Radioactive Methods</td>
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<tr>
<td>TA457</td>
<td>Microscopy and Scientific Photography</td>
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<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>Unit</th>
<th>Description</th>
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<tbody>
<tr>
<td>TA151</td>
<td>Biology 1A</td>
</tr>
<tr>
<td>TA152</td>
<td>Biology 1B</td>
</tr>
<tr>
<td>TA210</td>
<td>Laboratory Workshop Practice 1A</td>
</tr>
<tr>
<td>TA211</td>
<td>Laboratory Workshop Practice 1B</td>
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<tr>
<td>TA212</td>
<td>Laboratory Management</td>
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</tbody>
</table>

**Category 3 (Elective units)**

<table>
<thead>
<tr>
<th>Unit</th>
<th>Description</th>
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<tbody>
<tr>
<td>TA301</td>
<td>Biochemistry 1S</td>
</tr>
<tr>
<td>TA331</td>
<td>Organic Chemistry 1</td>
</tr>
<tr>
<td>TA332</td>
<td>Oil and Polymer Chemistry</td>
</tr>
<tr>
<td>TA452</td>
<td>Quality Control</td>
</tr>
<tr>
<td>TA459</td>
<td>Physics 3S</td>
</tr>
<tr>
<td>TA460</td>
<td>Microbiology 1S</td>
</tr>
<tr>
<td>TA450</td>
<td>Introduction to Electronics</td>
</tr>
<tr>
<td>TA453</td>
<td>Glassworking</td>
</tr>
<tr>
<td>TA230</td>
<td>Materials and Processes 1A</td>
</tr>
<tr>
<td>TA401</td>
<td>Biochemistry 2S</td>
</tr>
<tr>
<td>TA461</td>
<td>Microbiology 2S</td>
</tr>
<tr>
<td>TA330</td>
<td>Materials and Processes 2A</td>
</tr>
<tr>
<td>TA441</td>
<td>Computer Applications</td>
</tr>
<tr>
<td>TA251</td>
<td>&quot;Biology 2A&quot;</td>
</tr>
<tr>
<td>TA252</td>
<td>&quot;Biology 2B&quot;</td>
</tr>
<tr>
<td>TA305</td>
<td>&quot;Educational Aid Techniques 1A&quot;</td>
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<tr>
<td>TA306</td>
<td>&quot;Educational Aid Techniques 1B&quot;</td>
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<tr>
<td>TA307</td>
<td>&quot;Educational Aid Techniques 1C&quot;</td>
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<tr>
<td>TA308</td>
<td>&quot;Educational Aid Techniques 1D&quot;</td>
</tr>
<tr>
<td>TA310</td>
<td>Laboratory Workshop Practice LA</td>
</tr>
<tr>
<td>TA311</td>
<td>&quot;Laboratory Workshop Practice 2A&quot;</td>
</tr>
<tr>
<td>TA470</td>
<td>Project</td>
</tr>
</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 carried out in 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 last two weeks of June of each year.

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. DeMartini, 819 8805
Mathematics/Science Department Secretary, 819 8378

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Applied Science (Science Laboratory) subject details

Biochemistry 1A (TA301)
Three hours per week for two semesters.
Assessment is based on assignments, unit tests and practical work.
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

Biochemistry 2S (TA401)
Three hours per week for two semesters.
Assessment: see teacher in charge.
Excursion into biochemical knowledge in certain important areas. Enzyme action, digestion, nutrition, isotopes, blood, muscle nerve biochemistry. Heredity, Immunology, Analysis of protein. Hormonal regulation.

Reference
See teacher in charge.

Biology 1A (TA151)
Three hours per week for one semester.
Assessment: assignments and laboratory reports. Biological principles and materials. Awareness of the diversity of living organisms in nature and skills involved in handling of living materials.

Reference

Biology 1B (TA152)
Three hours per week for one semester.
Assessment: based on written assignments submitted throughout the course.
The course deals with supply and maintenance of a wide variety of organisms required for Secondary Science Programs. The principles of the physiological requirements of living organisms.

Reference
See teacher in charge.

Chemistry 1 (TA108)
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
Other class notes.

Chemistry 2S (TA208)
Three hours per week for one semester.
Assessment: assignments and unit tests throughout the course. Includes, at post-HSC level, a study of dissociation, hydrolysis, oxidation and reduction. Introduction to gravimetric and volumetric analyses and elementary organic chemistry.

References
Other class notes.

Chemistry Laboratory Techniques 1 (TA109)
Assessment: written reports and laboratory techniques.
Comprises a combination of lectures, demonstrations and laboratory experiments including handling and storage of chemicals, safety and first aid in laboratory, sampling, care of balances and glassware, analytical procedures.

References

Chemistry Laboratory Techniques 2 (TA209)
Assessment: written reports and laboratory techniques. Includes safety rules, precautions and techniques involved in gravimetric and volumetric quantitative analyses. Identification of organic compounds.

References
Other class notes.

Communication 1A and 1B (TH115, TH116)
Two hours per week for two semesters.
Assessment: based on set tasks including class work and group participation.
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.
1B (TH116) Research and presentation of analytical reports, job briefs and specifications. Group communications skills: meetings, discussions and interviews. Audio-visual techniques and presentations.

References
A class text and printed notes.

Computations (TA143)
Two hours per week — evening only, one semester.
Assessment consists of six unit tests and two assignments.
This unit begins with revision of basic whole number and decimal arithmetic, ratio, proportion and algebraic equations. This is followed by the study of formulae, scientific notation, indices, logarithms (including bases ten and e), the use of calculators and flowcharts, basic trigonometric functions, the solution of right-angle triangles and trigonometric graphs. The graphs unit includes experimental techniques with practical data and including linear, semi-log and log paper, monograms, and the solution of graphs, using laboratory and industrial materials.

References

Computer Applications (TA441)
Two hours per week for one semester.
Assessment is by projects and programming assignments given throughout the course. The aim of this course is to provide an introduction to the use of computers in industry. Topics covered include programming in BASIC, running packages, and familiarisation with large main frame computers as well as mini computers using batch and inter-active techniques. Social implications of computers are also considered.

References
FACOM and DEC Manuals. Penguin.
Materials and Processes 1B (TF330)
Three hours per week for one semester.
Assessment: practical work and one major test.
Reference

Methods of Separation (TA330)
Three hours per week for two semesters.
Assessment: technical report, assignments, unit tests. The principles, techniques and applications of the separation of the components of a mixture by means of ion exchange, chromatography in its various forms - electrophoresis, solvent extraction.
Reference

Microbiology 1S (TA460)
Three hours per week for two semesters.
Assessment: two exams, essays and assignments. Practical work includes a series of lectures, demonstrations, and practical work embracing bacteriology, viruses, fungi, proteza and serology.
References
See teacher in charge.

Microbiology 2S (TA461)
Three hours per week for two semesters.
Assessment: see teacher in charge.
Lectures, tutorial, demonstration, practical laboratory techniques on bacteriology, immunology and virology as major topics.
Reference
See teacher in charge.

Microscopy and Scientific Photography (TA457)
Microscopy — Three hours per week for one term (term 1).
Assessment: assignments, practical work and a final test. This unit deals with types of microscope (Optical Transmission Electron and Scanning Electron Microscopes), their component parts and method of functioning. Wherever possible examples of each type of microscope are used. Inspected or demonstrated. This includes special areas of the such as metallurgy and petrology. Films are used as a re-enforcement to actual experience and practical exercises are performed in the preparation of samples for microscopy.
Reference

Scientific Photography — Three hours per week for two terms.
Assessment: assignments, practical work and final test. Covers a wide spectrum of applied areas. Content of the course: studio photography, macro-photography, preparation of printed circuit boards, photo-chemistry, infra-red applications and thermography, stress analysis, and interferometry, holography technology, optics, special purpose materials and equipment, history of the subject, photography aids of scientific research in Antarctica, reprography systems, photographic images of scientific research in Antarctica, reprography systems, photography aids of scientific research in Antarctica.
Oil and Polymer Chemistry (TA332)
Three hours per week for one semester.
Assessment: tests and assignments.
This subject follows the development of the petroleum industry. An extensive account is given 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)
Three hours per week for two semesters.
Assessment: tests, assignments and practical work.
A study of the various methods of chemical analysis using a variety of instruments, e.g., colorimeters to spectrophotometers, fundamentals of UV/Visible, atomic absorption and infra-red spectrometry. Flame photometry, mass spectrometry, nuclear magnetic resonance are also areas covered by lectures and demonstrations.

References

Organic Chemistry 1 (TA331)
Three hours per week for one semester.
Assessment: based on unit tests, assignments and practical work.
Provides a systematic study of organic compounds and their properties and reactions. Examples to foster 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)
Three hours per week in the second semester of the first two years of the course.
Assessment: laboratory reports, project and laboratory techniques.
Taught in the second semester over two years and includes the planning and design of experiments, safety precautions, use of correct units and care of apparatus in the fields of measurement, mechanics, electrical and optical work, heat and temperature and properties of matter.

References
See teacher in charge.

Physics 15 (TA121)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Course: theorectical physics at post-Leaving Certificate level including — measurement and dimensions, geometric optics, linear mechanics and rotational dynamics, hydrostatics, heat and temperature, electrotechnics.

References
Class notes.

Physics 25 (TA221)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Course of lecture, at post-HSC standard includes — wave motion, thermodynamics, electro-magnetism, AC and DC circuits, properties of matter.

References

Physics 35 (TA459)
Three hours per week for one semester.
Assessment: unit tests and assignments.
Combines theory and technique exercises including physical optics, atomic and nuclear physics, acoustics — properties of matter.

Reference

Principles of Organisation (TS452)
Details to be approved.

Quality Control (TA452)
Two hours per week for one semester.
Assessment: unit tests and assignments.
Nuclear radiation, dosimetry, radiation chemistry, 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

Other references will be discussed in class.

Statistics (TA144)
Two hours per week — evening only, one semester.
Assessment: consists of two two-hour exams and two assignments.
This unit deals with basic descriptive statistics including measures of central tendency, frequency tables, measures of dispersion and methods of graphing and probability. Practical issues involved in experimental design and sampling techniques are investigated leading to probability distributions — Normal, Binomial and Poisson — and the definition of continuous and discrete variables. Statistical methods for experimental design and quality control in industry together with hypothesis testing, correlation, confidence intervals for means and standard deviations, t, F, and chi-square tests are used in practical situations.

References

Vacuum Techniques (TA458)
Three hours per week for one semester.
Assessment: see teacher in charge.

References
See teacher in charge.
* Biology 2A (TA251)
* Biology 2B (TA252)
* Educational Aid Techniques 1A (TA305)
* Educational Aid Techniques 1B (TA306)
* Educational Aid Techniques 1C (TA307)
* Educational Aid Techniques 1D (TA308)
* Laboratory Workshop Practice 2A and 2B (TA310, TA311)
* Typing

These units are to be offered when student numbers of school laboratory technicians warrants their commencement.

Compensatory and Bridging Courses

Tertiary Bridging Science (TM190)
A flexible study program is offered for students who have left secondary school and who wish to take pre-entry science-based studies at approximately post year 10 standard. Enquiries 819 8378

Reading, Writing and Study Skills (TH107)
This is a return-to-study course of twelve weeks, three hours per week, with emphasis on writing skills, efficient reading, comprehension and study skills. Enquiries 819 8370, 819 8816.

English Workshops (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.

Tertiary Bridging Mathematics (TM194)
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, TCE or tertiary, or maybe mathematics just for interest. Enquiries 819 8816, 819 8378.

Volunteer Tutor Training (TM102)
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.

Individual Learning (Numeracy and Literacy) (TR102)
**1982 calendar**

### January
- **4**: SIT re-opens
- **12**: HSC results
- **27**: STC course advisers available for consultation

### February
- **1**: Australia Day
- **2**: STC first term begins
- **3**: STC further enrolment period
- **5**: SIT enrolment begins — Round 1
- **8**: SIT semester 1 begins. Second and later year teaching begins: Art.
  - STC all full-time and part-time classes begin except part-time courses in Tertiary Orientation Program, Certificates of Business Studies, Certificate of Applied Science
- **11**: SIT enrolment ends — Round 1
  - STC all part-time classes begin in Tertiary Orientation Program, Certificates of Business Studies and Certificate of Applied Science.
- **22**: SIT first year undergraduate teaching begins: Applied Science, Business, Engineering

### March
- **1**: SIT first year undergraduate teaching begins: Arts
- **8**: Labour Day
- **31**: STC last day for enrolling without late fee ($5.00) excluding apprentices
  - SIT and STC last day for applications for conveyance allowance
  - SIT and STC last day for applications for refund of fees
  - STC last day for application for awards

### April
- **8**: SIT no teaching
- **9**: Good Friday
- **12**: Easter Monday
- **13**: Easter Tuesday
- **14**: STC classes resume
- **15**: STC classes resume
- **16**: SIT last day for withdrawal from a first semester subject, unit or course without penalty of failure
- **30**: STC last day for variations to enrolment Semester 1

### May
- **7**: STC first term ends. Classes cease at 9.30pm for vacation
  - SIT classes cease at 9.30pm for mid-semester break
- **17**: SIT classes resume
- **24**: STC second term begins. Classes resume

### June
- **1**: SIT last day for applications for awards for students completing their courses at the end of first semester
- **14**: Queen’s Birthday
- **21**: SIT examinations begin
  - STC examinations begin

### July
- **2**: SIT examinations end
  - STC examinations end
- **7**: SIT semester 1 results released, students may be required to attend for re-enrolment or amendment sessions
- **12**: SIT inter-semester break
  - STC classes commence after examination period
- **19**: SIT semester 2 begins
- **30**: SIT last day for confirmation of enrolment

### August
- **20**: STC second term ends. Classes cease at 9.30pm for vacation
  - SIT classes cease 9.30pm for mid-semester break
  - STC last day for variations to enrolment Semester 2
- **30**: SIT classes resume

### September
- **6**: STC third term begins. Classes resume
- **17**: SIT last day for amendments to enrolments without penalty of failure
- **23**: Show Day

### October
- **29**: SIT last day for application for awards for students completing their courses in December 1982

### November
- **2**: Melbourne Cup Day
- **8**: SIT study break
- **15**: SIT examinations begin
  - STC examinations begin
- **26**: SIT examinations end
  - STC examinations end

### December
- **13**: SIT re-enrolment for 1983 begins
- **16**: STC third term ends
- **17**: SIT semester 2 ends
- **24**: Swinburne closes for Christmas break